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1. General Notices for Safety

1-1. Before using the tractor

※ Have to read and understand this Operator's manual carefully and always refer to information and prescriptions outlined in this manual to prevent all potential health and safety risks.

◆ General information for intended use

- Your tractor is designed and manufactured to pull, to carry, to supply the power a variety of mounted or towed equipment **for agriculture**. Do not use the product for other purposes than intended by the manufacturer and outlined in this manual. Do not use this tractor for light/heavy forestry applications.
- Do not use the product beyond its **limits of terrain gradient** and stability than outlined in this manual. Using the tractor beyond these limits may cause a overturning accident.
- Do not use the tractor on higher speeds than allowed by the load of the tractor and road condition. Always choice **a suitable driving speed** to maintain the stability of the tractor.
- Do not use the tractor **near or on soft verges** of canals and brooks or banks and verges that are undermined by rodents. The tractor may sink sideways and roll-over.
- Do not use the tractor on brittle bridge heads and poor bridge floors, These constructions may collapse and cause overturning of the tractor. **Always check out the condition and carrying capacity of bridges and ramps** prior to engage.
- **Do not use the tractor without wearing the seat belt and Roll-Over Protective Structure (ROPS)** during operations where roll-over or tip-over hazards exist. The ROPS will only be fully effective when the driver remains attached to his seat.
- Do not use equipment mounted on the tractor which is not **correctly matching and firmly fixed**. Such equipment may increase the risk for roll-over and hit the tractor when coming loose.
- Do not use the tractor in combination with equipment arbitrary, without **having consulted the specific operator's manual provided with the equipment**. This manual alone cannot provide you with all the information about safety operation of the combination.
- Do not use the tractor beyond its **limits of dynamic stability**. High speed, abrupt maneuvers, and fast and short cornering will increase the risk of roll-over.
- Do not use the tractor for **overloaded pulling work**, in cases where you don't know if the load will yield, for instance when pulling stumps. The tractor may flip over when the stump is not yielding.
- Be extremely cautious when working with the tractor **on forage silos without lateral concrete walls**. A wide track setting may improve the lateral stability of the tractor.
- Be cautious that the **center of gravity of the tractor may increase** when the front-end loader is loaded or the three-point linkage are raised. In these conditions, the tractor may roll-over earlier than expected.
- **Do not step down from the tractor without shutting down the PTO, shifting the transmission to neutral and applying the parking brake.**

- **Never remove or modify or change** the driver's protection device or safety device arbitrary.
- You must take the necessary precautions to always be **aware of the possible presence of bystanders**, certainly when maneuvering in confined areas. Keep people away from the tractor during work. Pay the necessary attention while operating next to public roads or footpaths. Thrown objects can get projected outside the field and hit unprotected people like bikers or pedestrians. Wait until it is clear of bystanders.
- Do not violate the **local traffic rules** related to public roads and highways
- **Do not allow riders** on the tractor; do not allow people standing on the access way or step to the cab when the tractor is moving. Your view to the left will be obstructed and a rider risks to fall from the tractor during unforeseen or abrupt movements.
- **This tractor has only one operator station** and is a one man operated vehicle. Other people on or around the tractor during normal operation are not allowed.
- Always stay clear from implements operating area and especially **do not stand between tractor and trailed vehicle either three-point linkage when operating lift controls**; ensure no bystanders are near these operating areas.
- This tractor may be equipped with a number of sensors to control safety functions. **Do not attempt to bypass any function** on the tractor. You will be exposed to serious hazards, and moreover, the behavior of the tractor may become unpredictable.
- The manufacturer will not be responsible for the damage or safety problems caused by maintenance or repair with non-genuine parts. It must be requested to **use the genuine parts**.
- When cleaning the tractor by using high pressurized water, **do not inject water directly to the electronic parts, wiring, air intake pipe, hot engine or muffler** inside the bonnet.
- Maintenance and repair of the tractor is performed by **skilled technical experts with the proper tools** authorized by the manufacturer.
- For damage or accidents caused by the miss use or operation in violation of these rules, the manufacturer and its distributors **will not have any responsibility and warranty**.
- **Keep this Operator's manual** for future reference at hand (on the tractor).

◆ Safety Mark Description

- In the places where the cautions in usage are required, the marks such as "**DANGER", "WARNING", "CAUTION"** are found.
- You should comply with the description marked on the decals attached on the product or the contents marked with safety mark in this Operator's Manual..

Danger	**Danger** – This indicates a fatal dangerous situation that may cause a serious injury or death if not avoided.
Warning	**Warning –** This indicates a potential dangerous situation that may cause a serious injury or death if not avoided.
Caution	**Caution –** This indicates a potential dangerous situation that may cause a light injury or damage to the properties if not avoided.
Notice	**Notice –** This indicates the instructions for right use for the safety of persons or products.

◆ Product Identification

Your tractor has a exclusive chassis number and engine number marked with product serial number tag to identify the product. (*See Fig.1-1*)

In case of requesting service or parts from your dealer

Dealer will need chassis serial number, engine serial number, TM number and also running hours displayed on the instrument panel. (*See Fig. 1-3*)

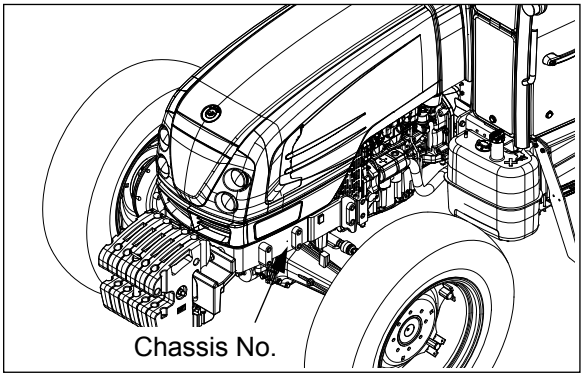


Fig.1-1

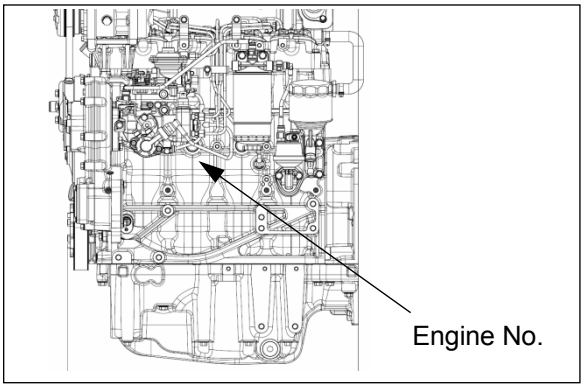


Fig.1-2

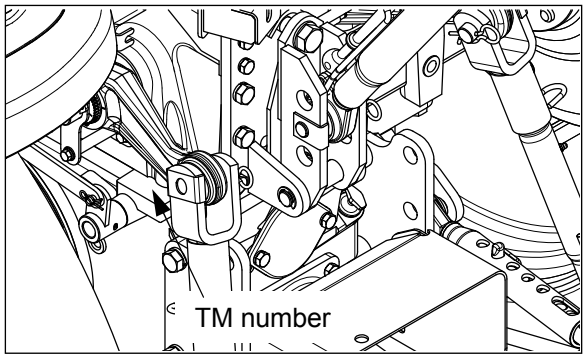


Fig.1-4

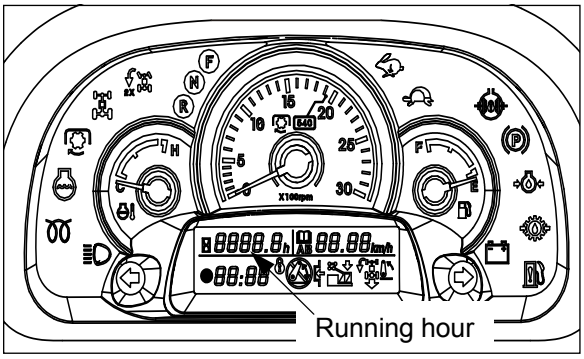
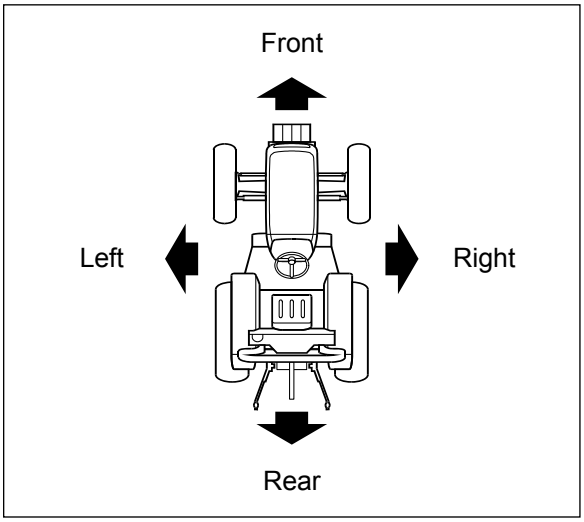


Fig.1-3

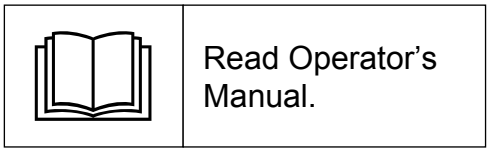
◆ Terminology

When reading this Operator's Manual, refer to the right figure for the discrimination of the front/ rear/ left/ right direction.



1-2. Safety Precautions - read this for safety before using.

(1) Notices before using the tractor

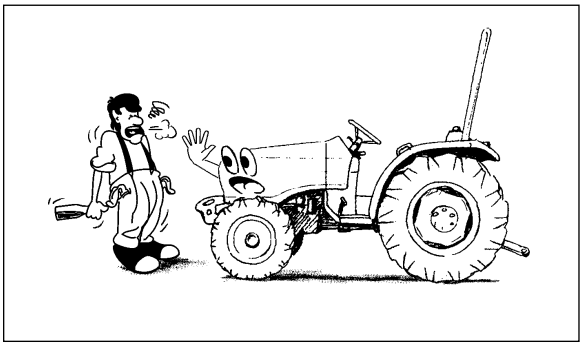


- **For Safety Instruction :** Before using the tractor, read this Operator's Manual carefully and understand the instructions fully for the safety prevention and right usage of the tractor and then use the tractor safely according to the instructions.

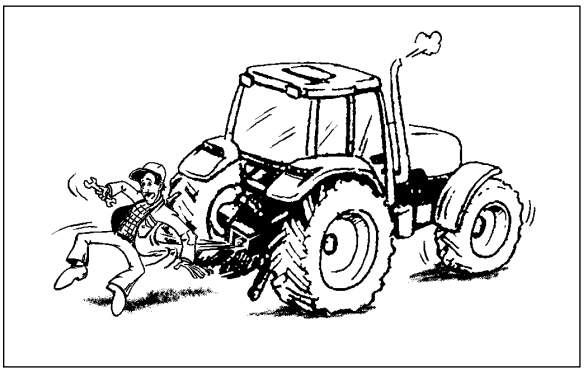
  Especially, special cares must be taken for using the tractor in the places where the safety signs such as Danger, Warning, Caution etc. are marked. *(See page 1-2)*

- **Safety Decals :** For right use and personal safety of the operator, the safety decals are attached to the parts related with safety operation. Before using the tractor, comply with the safety instructions. (*For further information, refer to "1-6 Safety Decals", See page 1-19*)

- **Operator's condition :** The persons such as patients, drunks, people on drugs, etc. are never allowed to operate this tractor.
  Only educated operators can use the tractor after learning the usage of controls for moving, stopping, turning and other operating.



- **Suitable Clothes & Protect Entanglement :**
  When checking or operating the tractor, wear tight fitting clothes and safety equipment instead of loose or long clothes. Also, slippers, high heel shoes are not suitable for operation. Wear the low shoes or work shoes or boots.



Warning	▶ Do not approach the rotating shaft such as PTO shaft or cooling fan, especially, with loose clothing and long clothes. The entanglement in rotating shaft can cause serious injury or death. ▶ Stop the engine and be sure PTO shaft is stopped before getting near it.

- **Keep Riders off :** Riders on the tractor or implements obstruct the operator's view and can be thrown off the tractor. It can cause a serious injury or death. Riders should not be carried on the tractor at any time.

Warning	▶ Additional seat (where fitted) is used for driver training or instruction. Do not permit anyone to ride on the tractor.

● **Protect Children :** Pay special attention to children (or a child) while using the tractor or during storage.

- Make sure children keep a safe distance from the tractor and all implements before using the tractor. Be alert to the presence of children.
- Do not let children or an untrained person operate the tractor.
- Do not allow children to approach the tractor while the engine is running.
- When parking the tractor, remove the ignition key and lower implements to the ground for children's safety.

⚠Warning	▶ As children are very curious, they may do unexpected movements or actions. Special care must be taken, when operating tractor or equipment.

● **Periodical Check :** "Lubrication and Maintenance" must be performed periodically. If necessary, do it immediately and if not, it may cause the failure, reduction of product life or physical injury.

* Periodic Lubrication and Maintenance
Fuel, Oil, Filter, Air cleaner, Battery, Belt, Cable, Grease, Pedals such as clutch and brake pedal, Tire air pressure, Wheel bolts, Toe-in, Electrical wirings, other items related to safety.

● **Genuine Parts :** When replacing parts, you must use "Genuine Parts" of LS tractor. Contact your authorized dealer. If not, it may cause a reduction of product life, failure and serious injury.

● **Restrict Maintenance :** If you repair or change some components and settings arbitrary, the performance of the tractor can NOT be guaranteed, and may void the warranty And also, maintenance of the heavy weighted parts without special tools can cause serious injury.
If it is required to check or repair the tractor due to trouble, or if you have any questions for the usage or operation of the tractor, contact your authorized dealer.
* The items that are not allowed to be modified or changed or removed arbitrarily by user are below :

- Protection structures such as PTO cover, Guards, Safety frame (Roll-bar), Cab, etc.
- Engine components, Fuel injection control and setting, etc.
- Automatic control equipment, Lamps, Transmission, Hydraulic valve and pressure settings.
- Other parts that detail and where complicated adjustments are needed.

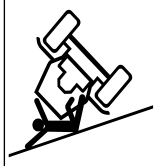
⚠Warning	▶ Skilled professional technology is needed for the repair. ▶ For derail maintenance or repair, contact your authorized dealer.

● **Lamps :** Do not modify the lamps or change the bulb capacity arbitrarily.

⚠Warning	▶ Modified lamps or change bulb capacity may cause the traffic accident by disturbing approaching driver's views. ▶ If the lamp is blown out, replace it immediately with a genuine part. In case of driving at night, it may cause a traffic accident.

- **Protective Structures :** For the operator's safety, various protective structures, i.e. Bonnet (Hood), Fan cover, PTO safety cover, PTO shaft protection cap, Roll-bar or another Roll-over Protective Structure, etc are attached on the tractor. If these structures are modified or removed by user arbitrarily, it may cause serious accident. Such behaviors are prohibited strictly.

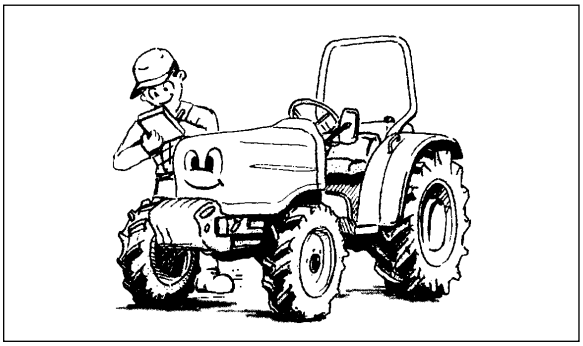
Warning	▶ The Protective Structure and interconnecting components are a certified system. Any damage, Fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the Protective Structure MUST be replaced with a new one. Contact your authorized dealer for Protective Structure inspection and replacement. ▶ In case of an accident, fire, tip or roll-over, the following MUST be performed by a qualified technician before operating the tractor again. - The Protective Structure MUST be replaced. - The mounting or suspension for the Protective Structure , operator seat and suspension, seat belt and mounting components and wiring within the operator's protective system MUST be carefully inspected for damage. - All damaged parts MUST be replaced. ▶ **DO NOT attach any device to the Protective Structure for pulling purposes.** ▶ **DO NOT weld, drill holes, attempt to straighten or repair the protective structure. The modification can reduce the structural integrity of the structure which can cause death or serious injury in the event of fire, tip, roll over, collision or accident and void the warranty.**



- **Level of protection of the FOPS (Falling Objects Protective Structure) :**
  - **For cabin model**, it provides protection against falling objects **according to OECD code 10 standard**. The energy level of drop test is 1365 J. But it does not mean that the cabin provide full protection against all the falling objects in the work field.
  - **For roll-bar model**, it does **NOT** any protection against falling objects. It is recommended to use a certified FOPS structure when working with front-end loaders.
- **Level of protection against hazardous substances :**
  - **For cabin model** of this tractor, it provides protection against hazardous substances **according to EN15695-1:2009 (Category 2).** But it can provide only dust protection level by pressurizing air in the cabin with air filters, Do not use the tractor with crop sprayers in chemical hazardous area.
- **Level of protection of the OPS (Operators Protection Structure) :** This tractor does **NOT** provide protection against
  - low hanging wires and branches in the forest, orchard or construction area, etc
  - toppling trees, primarily in case a rear-mounted tree grab-crane is mounted at the rear of the tractor
  - penetrating objects in the operator's enclosure, primarily in case a winch is mounted at the rear of the tractor.
  - potential risks by using any optional equipment that might be available to deal with those hazards.

  NEVER enter or operate these hazardous area without certified Operator Protective Structure installed.

(2) Notices when starting Engine



- Check each part with reference of “5. Lubrication and Maintenance” in this manual. If necessary, repair or replace it immediately. **Especially, check if safety protection structures or covers are attached originally, and the bolts and nuts are tightened well.**
- Before starting, **check again if there are other workers or children around the tractor and implements and keep a safe distance.**
- Start engine and operate the tractor **after sitting on the driver’s seat** correctly with seat belt fastened.
- Place the shuttle lever, transmission gear lever in NEUTRAL and especially check if parking brake is applied.
- Lower the implements on the ground.
- Ensure that rear view mirrors and the other mirrors (if fitted) are adjusted correctly, and check the operation of the headlights and other lights
- Put PTO switch to “OFF” position. If the PTO switch is NOT in “OFF” position, the engine can NOT be started. (*See Fig.1-5*)
- Depress the clutch pedal fully (if fitted). If not, the start safety switch does not contacted enough and the engine can NOT start.

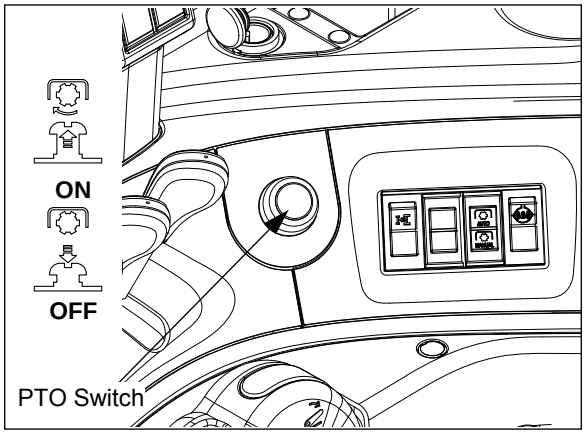


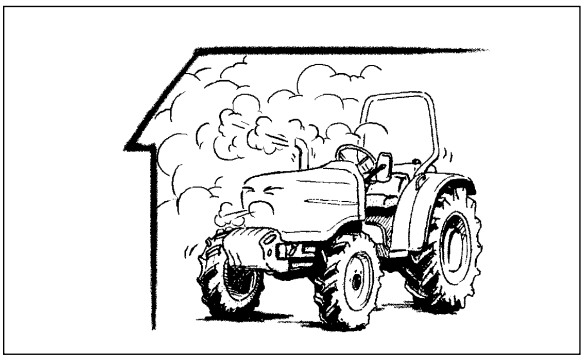
Fig.1-5

Warning	▶ Do not start the engine in a closed area. The poisonous exhaust gas can cause fatal damage to the driver or persons around.

(3) Notices while operating/using the tractor

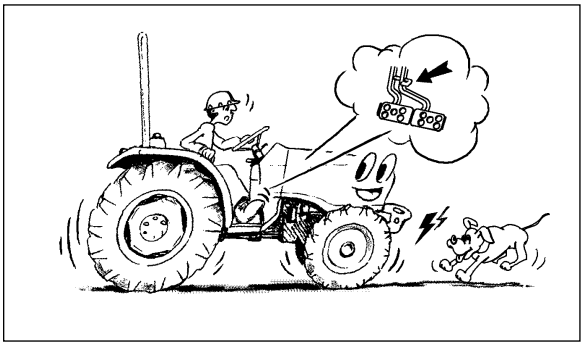
- **Ventilation**

Warning	▶ It is very dangerous to work in a closed area. The poisonous exhaust gas may cause serious damage to the human body. If you should work in this area, make sure to ventilate well and put on the protective mask.

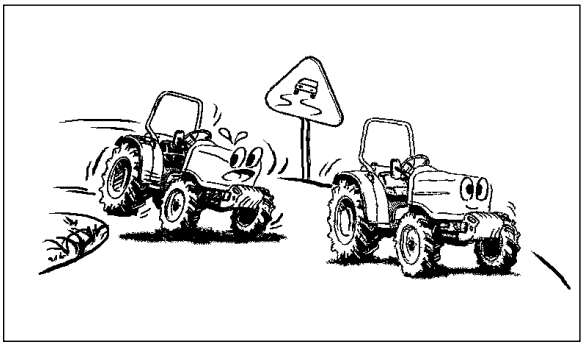


- **Noise and Vibration** : When working between buildings or in confined spaces, the sound pressure level can be increased. Wear suitable ear protectors in high noise level conditions. When working with equipment in the field, Vibration may intensity from the equipment may be increased. To reduce the harm to the body, take a rest periodically.

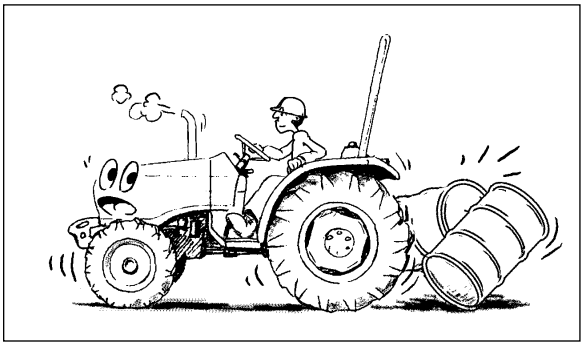
- Connect left and right brake pedals while driving on the road. (if fitted)
- DO NOT use differential lock device while driving on the road or turning in the field.
- DO NOT ride your foot on the brake pedal or clutch pedal.



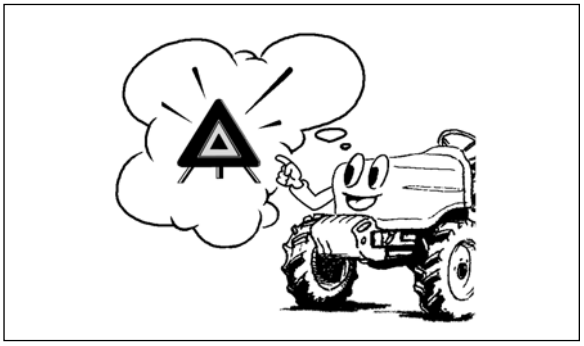
- Lower the driving speed enough before turning a sharp curve. Especially, when you drive the tractor with implements, make the turning radius wider.
- DO NOT start or stop the tractor suddenly. Engage the clutch and brake softly. If not, front wheels can be lifted up and it is very dangerous.
- Do not jump up and down while tractor is moving. When getting off or on the tractor, use the grip or handrail and sub step to prevent falls.



- When driving the tractor in reverse, lower the engine speed. Make sure to check if there is any obstacle or person in the rear.
- DO NOT permit other people and especially children approach within working area while operating tractor and equipment.

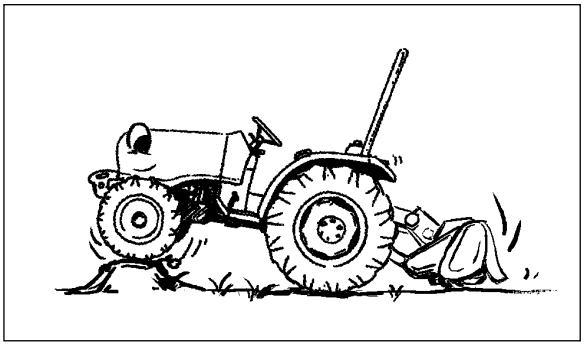


- Obey the traffic rules while driving on public roads. Do not exceed the local legal speed limit. Use a sing beacon or slow moving vehicle (SMV) to indicate that the vehicle is slow moving.
- If you can not drive the tractor due to a failure, move the tractor to a safe place and install troubled vehicle (safety tripod). (Day : backward 100m (328 ft) Night : backward 200m (656 ft))

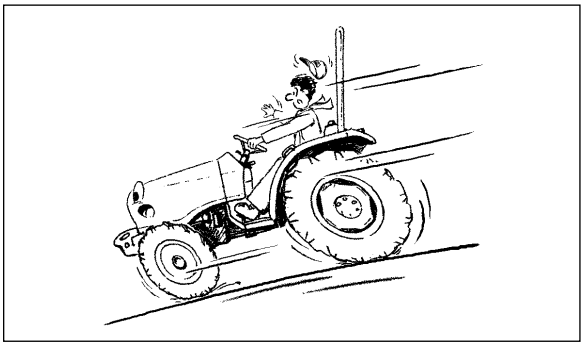


- Do not overuse the fuel, oil, etc and pay attention not to contact the skin directly. Generally, these materials contain harmful materials to the human body. When you work in a area where hazardous chemicals are sprayed, check the cabin filter (if fitted) and replace the filter with suitable one for the purpose being used. To protect the body completely from these harmful materials, wear a safe protection equipment such as mask, and clean the body after working.

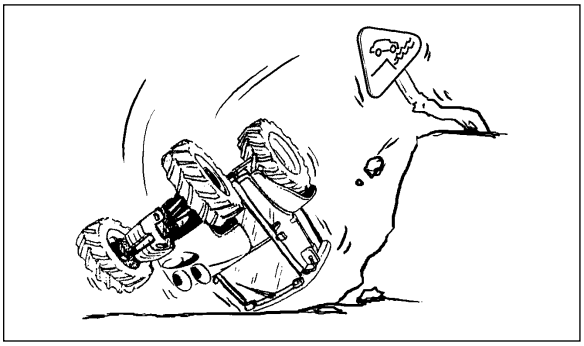
- When crossing a high ridge, let down the implement and go straight across the ridge at low speed.
- When connecting the implements to the front/rear of the tractor, install the proper additional weights in the rear/front of the tractor to keep the balance of the tractor.



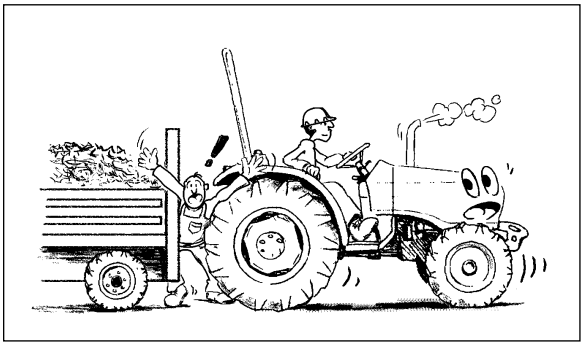
- On a downhill, operate the throttle pedal and brake pedal slowly and DO NOT drive while the transmission gear is in NEUTRAL.
- To climb a steep slope, drive tractor slowly in reverse up the slope rather than forward. It is much safer.
- When turning the tractor on a slope, pay attention to safety especially.



- When working at the edge of steep slope, take special care about a turn-over.
- When working, wear the protection equipment and tighten the seat belt.
- If the authorized passenger seat are not installed, keep riders off.



(4) Notices when connecting Implement

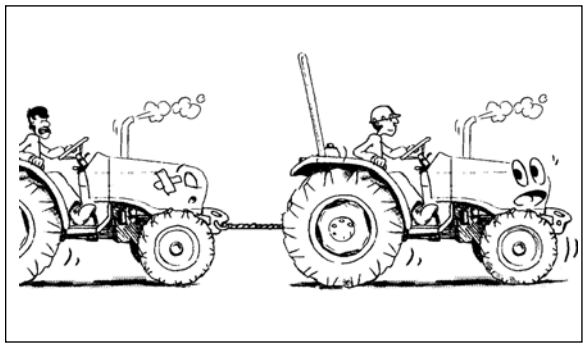


- Attach or detach the implement on wide and level ground.
- Do not use the tractor in combination with equipment arbitrary, without having consulted the specific operator's manual provided with the equipment.
- You have to stay clear from the three-point linkage when controlling it. Do not stay between tractor and implement.
- Do not stay between tractor and trailed vehicle for connecting/disconnecting or checking it. Trailed vehicle may roll down or tractor can move reverse.
- When towing the trailed vehicle, use only hitch or drawbar. Do not tow by connecting with any other structures.
- When connecting heavy implements, apply the parking brake and use the wheel chock.
- Do not attach over-weighted implement.

⚠ Caution	▶ When connecting or disconnecting hydraulic coupler, lower implement on the ground, turn off engine and check if the pressure of hydraulic line is released. ▶ When installing the implement having big hydraulic cylinders or lines, check oil level in tractor transmission housing after installing the implements.

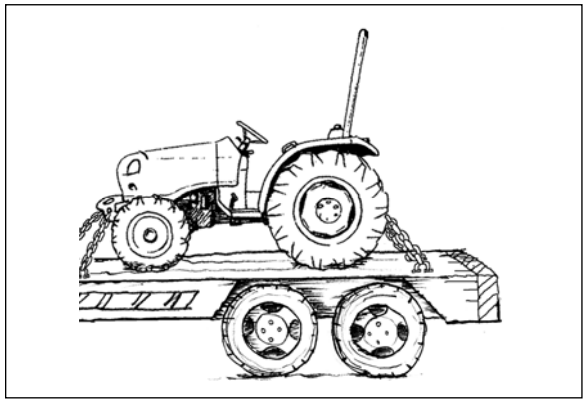
⚠ Warning	▶ Before connecting or checking the implement, put PTO switch to "OFF" and place PTO gear lever in Neutral position.
	▶ When attaching or detaching the implement, make sure to fix the implement and tighten the three point hitch pins correctly. If not, the serious troubles and injury can occur during the operation.
	▶ If heavy loaded trailer is connected to 3-point linkage or any structure, it can cause turnover or failure and serious injury. Make sure to use towing hitch or authorized draw bar.

(5) Notices when towing the tractor



- If your tractor needs to be towed for a short distance, Use the hitch (or drawbar) or front towing hook. Do not connect to other structures such as rear axle, ROPS, front axle, steering components for towing.
- Tractor can be steered for a short distance without engine running, but it will be hard to turn the steering wheel. If possible, run the engine for steering and lubrication.
- When being towed, disengage the 4WD, differential lock, parking brake and place all gear shift levers in neutral position.
- Check the horizontal and vertical permissible load of the hitch (or drawbar) before towing. The load is different with trailer brake, and stopping distance increases with speed and weight of towed loads and slope. Make sure you consider the total weight of the equipment and its load. (*See section 4. "Hitch and Drawbar"*)
- Drive slowly when towing extremely heavy loads.
- Do not tow trailers that are not fitted with an independent braking system.

(6) Notices when transporting the tractor

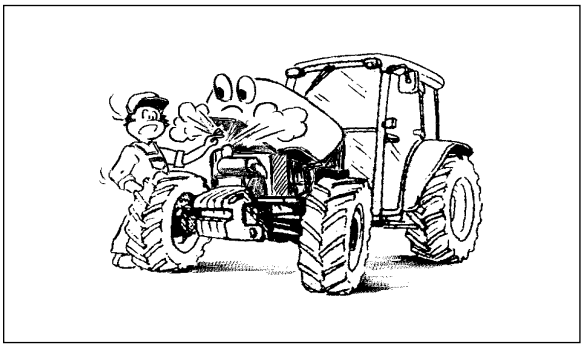


- When transporting the tractor by truck, trailer, etc, use suitable equipment or facilities to load or unload the tractor.
- Fix the tractor tightly to the vehicle with heavy-duty straps or chains.
- When fixing the rear of the tractor, use the hitch or hitch support.
- When fixing the front of the tractor, use the towing hook.
- When driving on public roads, the transporting vehicle must have signs and lights required by local regulation to avoid collision with a vehicle.

⚠Caution	▶ When fixing the tractor, Do not hook or connect chains to the 4WD shaft, steering cylinder, tie-rod or front axle. These can be damaged by the chain or excessive strain. ▶ In case of turbocharger engine (where fitted), cover the exhaust outlet to protect that the turbocharger does not rotate by air without lubrication.

(7) Notices when servicing the tractor after work

- The check and maintenance must be performed after stopping the engine and cooling down the engine sufficiently.
- DO NOT pour water into the radiator or engine when the engine is hot. The engine or radiator may crack.



Warning	▶When opening the radiator cap, hot cooling water or steam may explode. Remove the cap using a thick rag or glove to prevent serious burns.

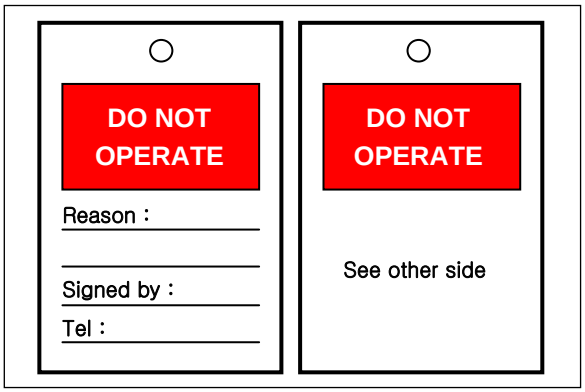
- Before checking or repairing the hydraulic system and fuel system, make sure the engine is stopped, and all the transmission gears are in neutral, and lower the implements to the ground. The leaks of pressurized fluid can cause a fatal physical injury. If injured by leaking fluid, get medical attention immediately

Warning	▶Before removing hydraulic pipes or hoses and other parts, make sure to check that hydraulic pressure is relieved completely. The leaks of pressurized oil can cause a fatal physical injury. ▶Use proper protection equipments, before servicing hydraulic system. ▶Before connecting or disconnecting the hydraulic quick coupler, lower the implements to the ground, and check that hydraulic pressure is relieved.

- Keep an approved **fire extinguisher** on your tractor.
- Never fill the fuel tank while the engine is running or the engine is hot. And never smoke or have flames around fuel tank.
- To prevent fire or explosion, keep flames or sparks away from battery. Do not grind or smoke or weld near a battery. For further information, see section 5. “Battery handling and Notices”.

Warning	▶Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause an explosion by spark. ▶The gas generated from the battery is explosive. Keep cigarettes, sparks and flames away from battery. Never check battery charge by placing a metal object across the terminals. ▶**Sulfuric acid in battery electrolyte is poisonous.** It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes. Do not touch the battery or liquid by bare hand without gloves or any protection. Flush eyes with clean water for about 20 minutes If the electrolyte is splashed into the eyes. Get medical attention immediately. ▶Do not short circuit the battery posts with metal items. ▶Battery post, terminals and related accessories contain **lead and lead compounds**. **MUST WASH YOUR HANDS AFTER HANDLING.**

- Do not attempt to remove or unfasten the air conditioning components arbitrary. There is a possible to be severely frostbitten or injured by escaping refrigerant. Contact your authorized dealer to work air conditioning systems.
- Before servicing the tractor, attach a "**DO NOT OPERATE**" warning tag to the tractor in an area that will be visible.



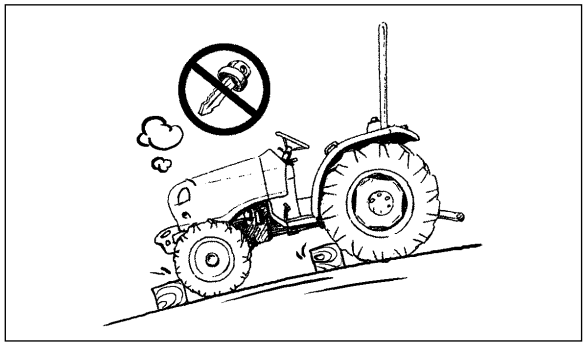
- It is advisable to keep a **First-aid kit** on your tractor.
- Keep the area used for servicing the tractor clean and dry. Wet or oily floors are slippery. It can be dangerous when working with electrical equipment.
- Remove all litter or debris from the tractor. Especially check the engine area and exhaust system.

(8) Notices when handling Diesel Fuel

- Do not mix gasoline, alcohol or blended fuels to diesel fuel. These mixtures are explosive in fuel tank.
- Never remove the fuel cap or refuel with the engine running or hot.
- Do not smoke while refueling the tractor. Keep any type of flame away.
- Maintain control of the fuel filler nozzle when filling the fuel tank.
- Do not fill the fuel tank to capacity. Fill only to the bottom of the filler neck to allow room for expansion.
- Wipe up spilled fuel immediately and always tighten the fuel tank cap securely.
- If the original fuel tank cap is lost, replace it with an approved one.
- Never use fuel for cleaning purposes.
- Arrange fuel purchases so that summer grade fuels are not held over and used in the winter.
- Before operating with Bio-Diesel, contact your authorized dealer for information relating to the use and storage of Bio-Diesel.

(9) Notices when leaving the tractor

- Stop the tractor on level ground.
- Place the transmission gear in neutral and put PTO switch to “OFF” position.
- Lower the mounted implements on the ground.
- Apply the parking brake.
- Stop the engine and remove the ignition key.
- Before you leave the operator’s station, wait for engine and all moving parts to stop.
- Have to apply the wheel chock when parking the tractor on a slope unavoidably.



⚠Caution	▶ When parking the tractor on a slope unavoidably while attaching the loaded equipment, the tractor may move even if the parking brake is applied. Apply the wheel chock and low speed transmission gear as follow. -. Mechanical : downhill ⇒ Reverse 1gear / uphill ⇒ Forward 1gear -. Power shuttle : Appling low speed gear is NOT effective.

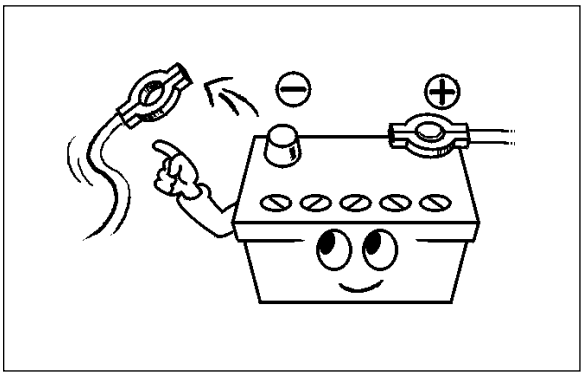
(10) Notices relating to Toxic substances

- Exhaust gas and some its constituents of the Diesel engine are known to the State of California to cause cancer, birth defects, and other reproductive harm. (California proposition 65)
- Battery post, terminals and related accessories contain lead and lead compounds. **MUST WASH YOUR HANDS AFTER HANDLING.**

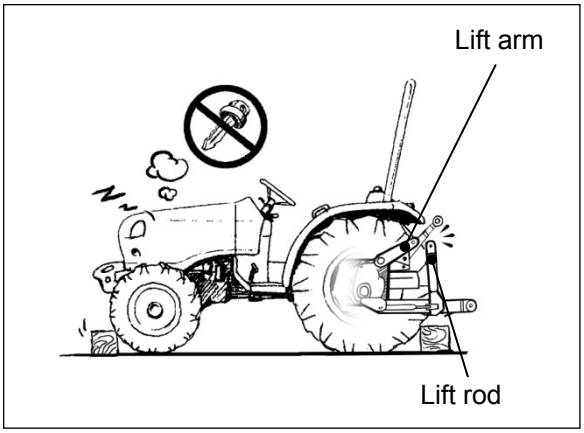
1-3. Long-term storage

(1) Preparation for storage

※ Wash the tractor cleanly and follow the procedure as below.



- Apply grease or lubricant oil or spray paint to the non-painted metal to avoid corrosion. Keep the tractor in a covered, dry and well-ventilated place.
  Temperature : 10℃ ~ 35℃ (50°F ~ 95°F)
  Humidity : 45% ~ 70%
- Place all controls, including electrical switches, in neutral position and apply the wheel chock to the tires and disengage the parking brake.



- Check the lubricant capacity of each part and if the engine oil has exceeded 100 hours of work, change the oil and run the engine for 5 minutes at idle rpm.
- Drain the engine coolant completely. If the engine coolant is anti-freeze solution, it is not necessary to drain but check its concentration.
- Fill the fuel tank full with fuel.
- Loosen all drive belts and clean the air cleaner.
- Loosen the rubber plug (if fitted) under the clutch chamber to drain water.
- Remove the battery, clean the cover and smear the terminals with grease. Place the battery in a ventilated place not less than 10°C (50°F) and away from direct sunlight.
- If possible, fit stands or other suitable supports under the axles to raise the wheel off the ground. And let the air out of the tires. If not, check the tire pressure from time to time.
- Remove the lift rod and place the lift arm to the highest position to protect the cylinder.
- Remove the ignition key.
- Cover the tractor with a non-water-proof cover.
- If the implements are attached, lower the implements on a support off the ground.

⚠Warning	▶ When restarting the engine at the end of long-term storage, follow the instructions of “Preparation for Reuse”. (*See next page*)

(2) Check & Maintenance during storage

- Apply grease or lubricant oil to non-painted metal to avoid corrosion.
- Check the leakage of fuel, oil and coolant. If necessary, repair the damaged part.
- Check the tire air pressure and maintain the proper pressure.
- The battery should be charged about once a month not to be discharged entirely.

⚠ Caution	▶ As the electrolyte of battery is sulfuric acid, it is emits the explosive and poisonous gas. It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes. - Keep the sparks and flames and cigarettes away from the battery. - When handling the battery, wear safety glasses to protect the eyes. - If the electrolyte contacts the eyes and skin, wash with water immediately and go to see a doctor. ▶ When removing and storing battery, select dry and cool place out of reach of children.

(3) Preparation for Reuse

※ When using first after long-term storage, check each part as below.

- Check the damaged part or loosen part
- Check the leakage of fuel, coolant, engine oil, transmission and front axle oil.
- Check the level and density of the engine coolant.
- Check the level of engine, transmission, rear and front axle oil, and fuel.
  (For further information, refer to the section “5. Lubrication and Maintenance” in this manual.)
- Check all drive belts carefully, paying particular attention to the point where the straight run of the belt starts to bend around the pulley. Check the vee groove in the pulley for corrosion.
- Electric system check
  - Is there any open circuit or any other problem in the wiring?
  - Is there any problem of the instruments?
  - Is the charging state of the battery sufficient?
- Start engine, and check the engine oil pressure indicator and battery charging indicator in the instrument panel. These indicators are turned off, while engine is running.
- Run the engine at a fast idling speed (suggest 1000/1500 rpm) until normal operating temperature is registered, and check for oil, fuel and coolant leakage. (For further information, *See page 4-1*)

1-4. Notices for ”Use & Disposal” related to the environment

Soil, Air and Water are essential elements for human life. To contribute to environment preservation of the Earth, we are trying to minimize the environment pollution necessitated by general business activity such as product design, manufacturing, distribution, etc.

Several substances and products derived from chemical and petrochemical products are major portion of environment pollution and must be disposed of according to environment laws or related regulations, and common sense.

We’d like to notify the following items for “Use & Disposal” related to environment preservation.

1. Avoid the overload work after reading the Operator's Manual.

   Overload work may reduce the life of the product as well as the unburned exhaust gas occurred during overload work becomes the major cause of air pollution.

2. When you replace various oils (engine, transmission, anti-freeze solution) directly, do not throw the exhausted waste oil to any place.

   This may pollute the soil and water seriously and also is prohibited legally. If violating, you would be responsible for that by civil or criminal case. The waste oil must be disposed according to the environment laws.

3. Use the product according to the Operator's Manual and if the life of product ended, do not throw away (or dispose) to any place. The rust water or oil coming from the disposed product may cause the pollution of soil or water. Thus, the wasted product must be disposed lawfully, contact your authorized dealer nearby.

4. Modern lubricants contain additives. Do not burn the disposed oil or fuel in conventional heating systems.

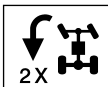
5. When you drain or fill the fuel, lubricants oil and coolants, do not left to be absorbed into the ground. They must be collected and disposed in a suitable manner.

6. Do not adjust the setting of the fuel delivery system. This will alter the emission of exhaust fumes.

1-5. Symbols

The followings show the symbols and its meaning used for the tractor.

	Refer to User's Manual.
	Caution!
	Battery charging
	Fuel level
	Fuel filter
	Engine coolant temperature
	Transmission oil pressure
	Engine oil pressure
	Diesel engine preheat
	Parking brake
	Emergency lights
	Engine start
	Engine stop
	PTO stop
	PTO in operation
	Differential lock device

	Gear Neutral
	Forward/Rearward
	Forward
	Backward
	4WD connection
	4WD disconnection
	Quick turn (Optional)
	Cruise drive (Optional)
	Cruise drive release (optional)
	Position control (Up)
	Position control (Down)
	Draft control (Deep)
	Draft control (Shallow)
	Cylinder rod (shorten)
	Cylinder rod (extend)
	Cylinder rod (floating)

	Low speed
	High speed
	Engine speed control (throttle)
	Engine speed control (throttle)
	Turn signal light
	Direction indicating light
	Light switch
	Side lights
	Headlights (downward)
	Headlights (upward)
	Work light
	horn
	Window wiper
	Window wiper / Washer (front)
	Window wiper / Washer (rear)
	One side brake light (optional)

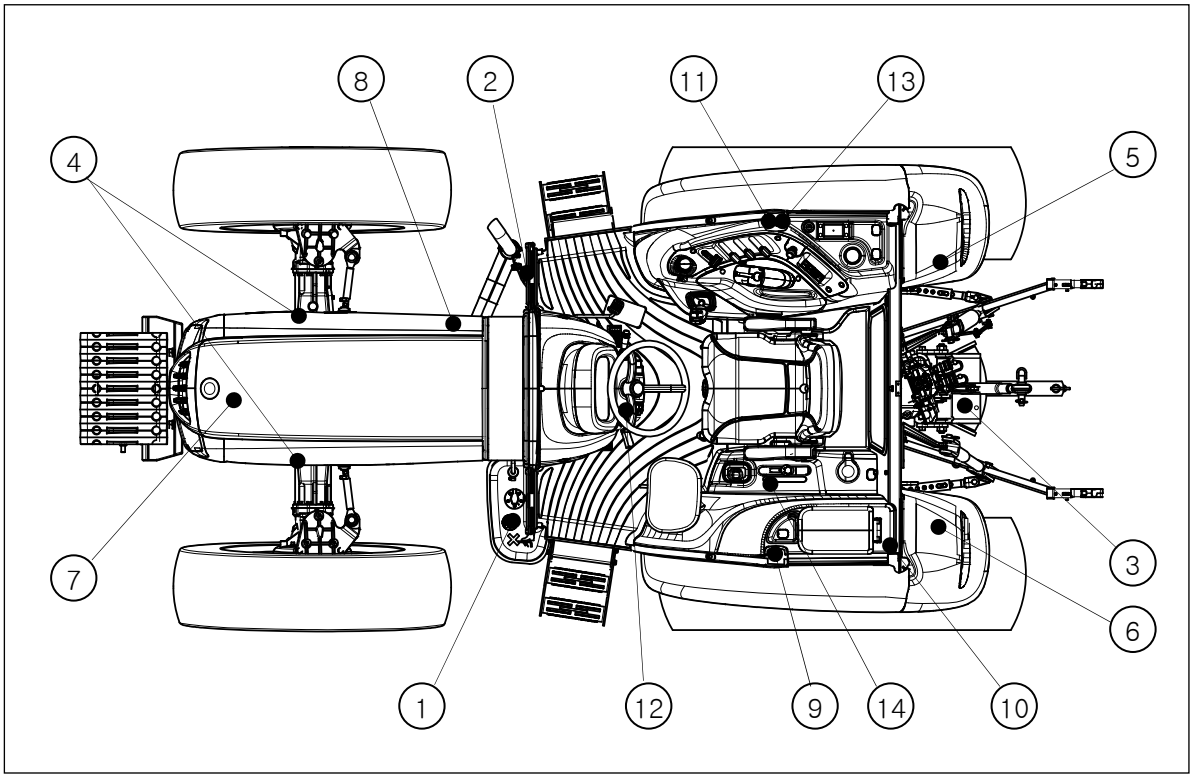
1-6. Safety Decals

(1) Handling and Maintenance of Safety Decals

- For intended use and personal safety of the operator, the safety decals (labels) are attached to the parts related with safety operation.
- Before operating or maintenance of the tractor, check the position and read the instructions carefully.
- If you find “Read Operator’s Manual” symbol (1) in the decals, refer to the appropriate page of the operator’s manual for further information regarding operation, adjustment and maintenance.

Caution	▶ The instructions described on the safety decals are very important for the safety of the operator and workers around. If ignored, it may cause the death or serious injury. ▶ If the decals are dirty, wash them with soap water and wipe with soft rags. Do not use the thinner, acetone, or other harsh chemicals as it may erase the instructions. ▶ If the decal is detached or damaged, replace it with a new one on original position. ▶ When cleaning the tractor with pressurized water, the decals can be detached. ▶ If a decal is on a part that is replaced, make sure the decal is attached on the new part.

(2) Safety Decals and Attaching position



1. Location : On top of the Fuel Cap

- Ultra low sulfur diesel fuel only.
- Do not smoke while refueling and keep any type of flame away.
- Part No. : 40241059

2. Location : On top of starter motor, on the left-hand side of the engine.

- RUN OVER HAZARD
- To prevent serious injury or death;
- Start only from seat with transmission and PTO in neutral.
- DO NOT short across starter terminals to start engine.
- Part No. : 40195651

WARNING
RUN OVER HAZARD
To prevent serious injury or death
•Start only from seat with transmission and PTO in neutral.
•Do not short across starter terminals to start engine.
40195651

3. Location : On top of rear PTO guard.

- Rotating driveline contact may cause serious injury or death.
- Keep all driveline, tractor and equipment shields in place during operation.
- Part No. : 40195650

WARNING
•Rotating driveline contact may cause serious injury or death.
•Keep all driveline, tractor and equipment shields in place during operation.
40195650

4. Location : On the left/right-hand side of the fan shroud.

- Keep hands clothing away from the rotating fan and belts.
- Contact with moving parts may cause loss of fingers or a hand.
- Failure to comply could result in death or serious injury.
- Part No. : 40239638

WARNING
Keep hands and clothing away from rotating fan and belts.
Contact with moving parts may cause loss of fingers or a hand.
40239638

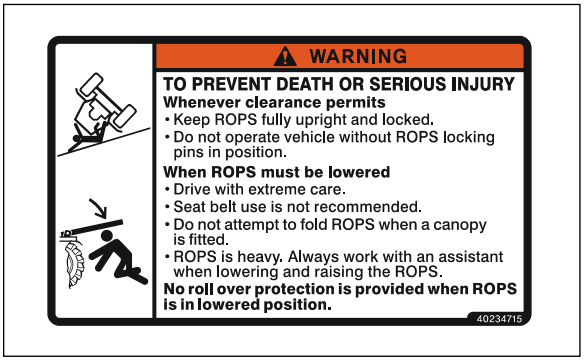
5. Location : On top of the right-hand fender.

- HIGH PRESSURE FLUID HAZARD
- To prevent serious injury or death;
- Relieve pressure on system before repairing, adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks, use wood or cardboard instead of hands.
- If hydraulic fluid or fuel sinks into skin, seek medical attention immediately.
- Part No. : 40195652

WARNING
HIGH PRESSURE FLUID HAZARD
To prevent serious injury or death
•Relieve pressure on system before repairing, adjusting or disconnecting.
•Wear proper hand and eye protection when searching for leaks, use wood or cardboard instead of hands.
•If hydraulic fluid or fuel sinks into skin, seek medical attention immediately.
40195652

6. Location : On top of the left-hand fender. (Roll-bar model only)

- TO PREVENT DEATH OR SERIOUS INJURY;
- Keep Roll-over Protective Structure fully upright and locked.
- Do not operate vehicle without ROPS locking pins in position.
- When ROPS must be lowered:
- Drive with extreme care.
- Seat belt use is not recommended.
- Do not attempt to fold ROPS when a canopy is fitted.
- ROPS is heavy. Always work with an assistant when lowering or raising the ROPS.
- No roll-over protection is provided when ROPS is in lowered position.
- Part No. : 40008817


WARNING
TO PREVENT DEATH OR SERIOUS INJURY
Whenever clearance permits
• Keep ROPS fully upright and locked.
• Do not operate vehicle without ROPS locking pins in position.
When ROPS must be lowered
• Drive with extreme care.
• Seat belt use is not recommended.
• Do not attempt to fold ROPS when a canopy is fitted.
• ROPS is heavy. Always work with an assistant when lowering and raising the ROPS.
No roll over protection is provided when ROPS is in lowered position.
40234715

7. Location : On top of air cleaner support.

- TO PREVENT DEATH OR SERIOUS INJURY; High pressure steam and hot water. Remove filler cap with extreme care.
- Failure to comply could result in death or serious injury.
- Part No. : 40239637

WARNING
To prevent serious injury or death.
High pressure steam and hot water. Remove filler cap with extreme care.
40239637

8. Location : On the right-hand side of Band-frame.

- TO PREVENT SERIOUS INJURY OR DEATH; Beware hot part. Keep clear of muffler to avoid injury.
- Failure to comply could result in serious injury.
- Part No. : 40239636

9. Location : On the left-hand pillar for Cabin model / On top of left-hand fender for Roll-bar model.

① CAUTION

- PTO selector & lever must be in “OFF” position to start engine.
- Do not operate on hard surfaces with 4WD engaged.

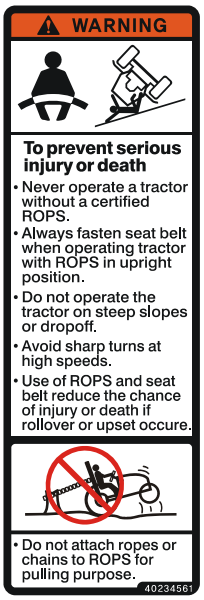
② WARNING

- TO PREVENT SERIOUS INJURY OR DEATH;
  - After first hour of operation and daily thereafter, check front and rear wheel lug nuts and bolts for proper torque.
  - PTO - keep hands, feet and clothing away from PTO & other moving parts.
  - Disengage PTO and shut off engine before servicing tractor or implements, or attaching / detaching implements.
  - Keep all safety shields in place for your protection.
  - Pull only from approved drawbar or lower links of 3-point hitch at horizontal position or below.
  - Lock tractor brake pedals together for travel on roads or highways.
  - Always apply parking brake and shift transmission to neutral before dismounting.
  - Always use a seat belt when you operate the tractor.
  - Allow no riders on tractor or implements.
  - Do not use a seat belt when operating with folding ROPS in lowered position.
  - Engine exhaust fumes can cause death or sickness. Always try to work in a ventilated area.
  - Disengage the differential lock when turning the tractor. Always disengage the differential lock when driving on roads.
  - Depress on or both brake pedals to disengage the differential lock.
- Failure to comply could result in death or serious injury.
- Part No. : 40195656

CAUTION
• PTO selector & lever must be in "OFF" position to start engine.
• Do not operate on hard surfaces with 4WD engaged.
WARNING
To prevent serious injury or death
• After first hour of operation and daily thereafter, check front and rear wheel lug nuts and bolts for proper torque.
• PTO – keep hands, feet and clothing away from PTO & other moving parts.
• Disengage PTO and shut off engine before servicing tractor or implements or attaching or detaching implements.
• Keep all safety shields in place for your protection.
• Pull only from approved drawbar or lower links of 3-point hitch at horizontal positon or below.
• Lock tractor brake pedals together for travel on roads or highways.
• Always apply parking brake and shift transmission to neutral before dismounting.
• Allow no riders on tractor or implements.
To prevent serious injury or death
• Always use a seat belt when you operate the tractor.
• Do not use a seat belt when operating with folding ROPS in lowered position.
•Engine exhaust fumes can cause death or sickness.
•Always try to work in a well ventilated area.
•Disengage the differential lock when turning the tractor.
•Always disengage the differential lock when driving on roads.
•Depress one or both brake pedals to disengage the differential lock.
40195656

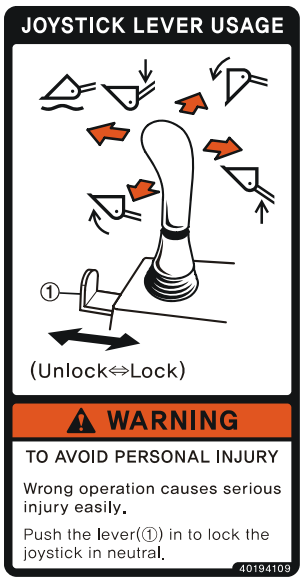
10. Location : On the left-hand side of the ROPS frame. (Roll-bar model only)

- TO PREVENT SERIOUS INJURY OR DEATH;
- Never operate a tractor without a certified ROPS.
- Always fasten seat belt when operating tractor with ROPS in upright position.
- Do not operate the tractor on steep slopes or drop-off.
- Avoid sharp turns at high speeds.
- Use of ROPS and seat belt reduce the chance of injury or death in roll-over or upset occur.
- Do not attach ropes or chains to ROPS for pulling purpose.
- Failure to comply could result in death or serious injury.
- Part No. : 40234561


WARNING
To prevent serious injury or death
• Never operate a tractor without a certified ROPS.
• Always fasten seat belt when operating tractor with ROPS in upright position.
• Do not operate the tractor on steep slopes or dropoff.
• Avoid sharp turns at high speeds.
• Use of ROPS and seat belt reduce the chance of injury or death if rollover or upset occure.
• Do not attach ropes or chains to ROPS for pulling purpose.
40234561

11. Location : On the right-hand pillar for Cabin model / On the right-hand fender for Roll-bar model. (optional)

- JOYSTICK LEVER USAGE.
- TO AVOID PERSONAL INJURY; Wrong operation causes serious injury easily. Push the lever(1) in to lock the joystick in neutral.
- Failure to comply could result in death or serious injury.
- Part number : 40194109

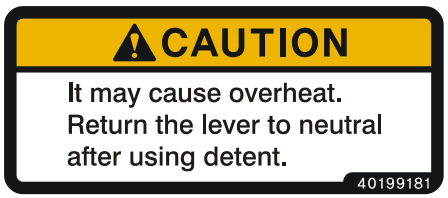


12. Location : On the steel cover under the instrument console. (optional)

- CAUTION.
- To prevent unnecessary wear, never ride the clutch pedal for resting a foot.
- Part number : 40222778

13. Location : On the right-hand pillar for Cabin model / On the right-hand console for Roll-bar model. (optional)

- CAUTION.
- It may cause overheat. Return the lever to neutral after using detent.
- Part number : 40199181



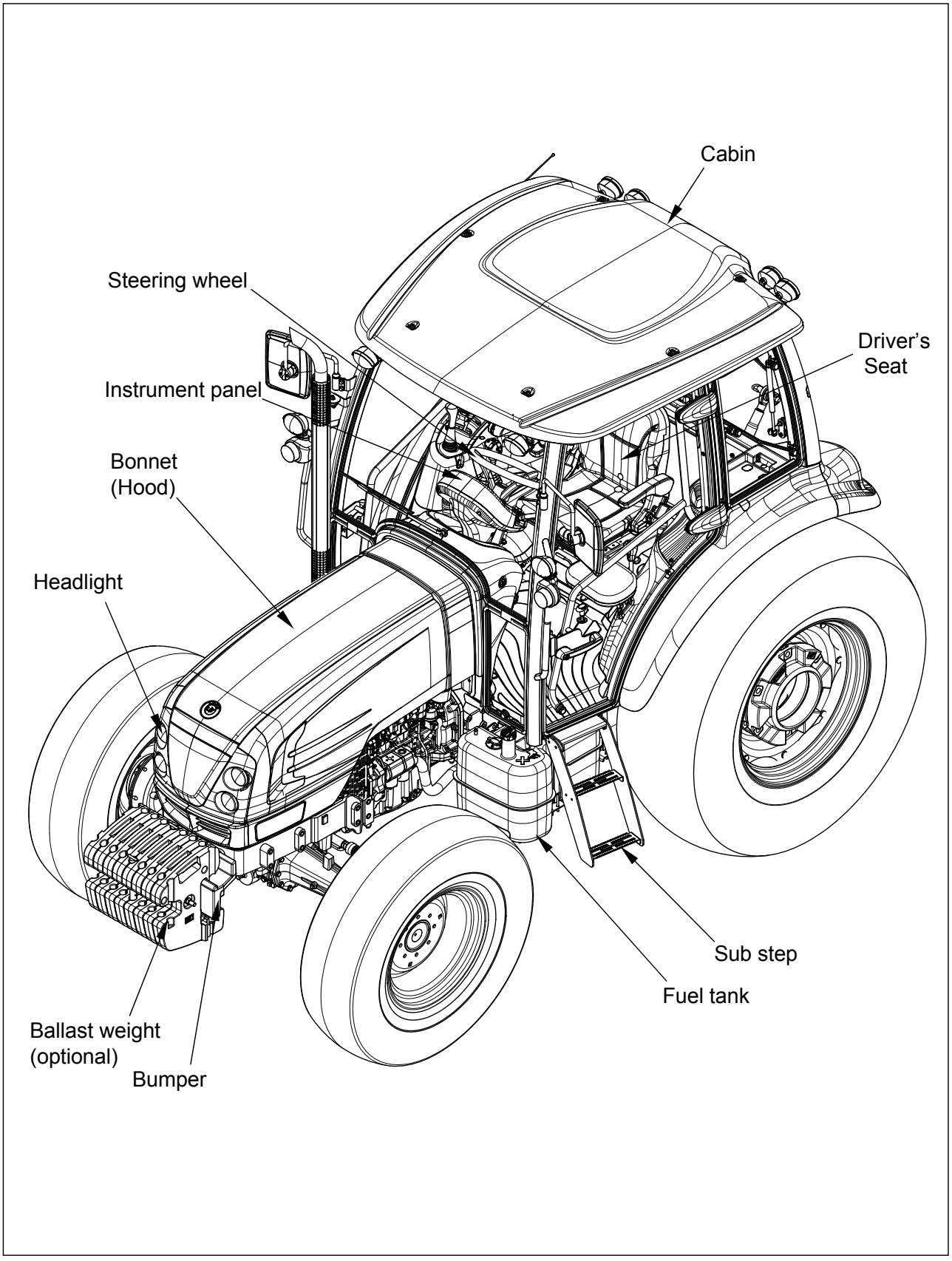
14. Location : On top of range gear cover, on the left-hand of the driver's seat.

- CAUTION.
- Only L and M stage of Sub-change are available for Creeper.
- Part number : 40199180

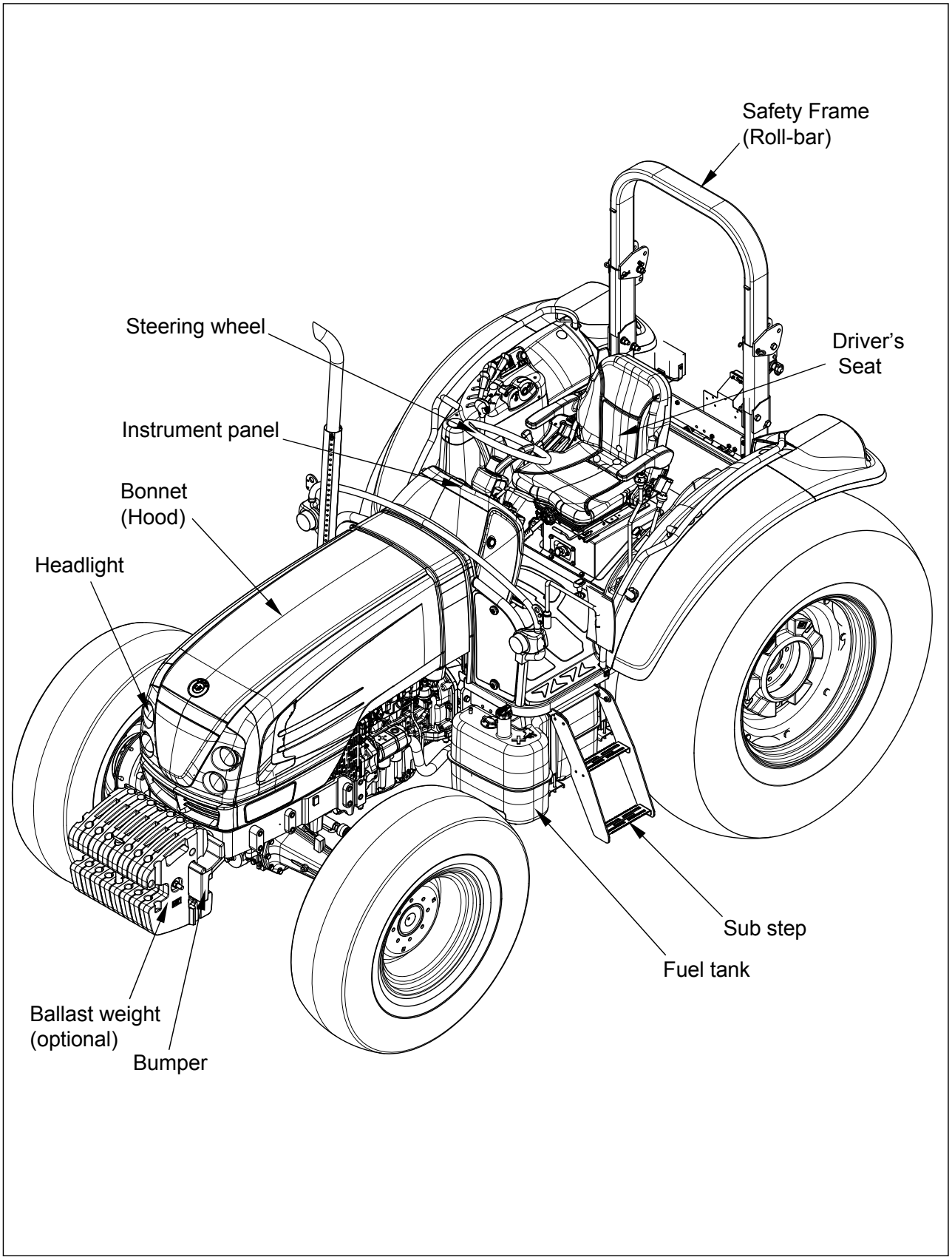
2. Instruction for Safe operation

(1) The name of each part

① Cabin type



② Roll-Bar type

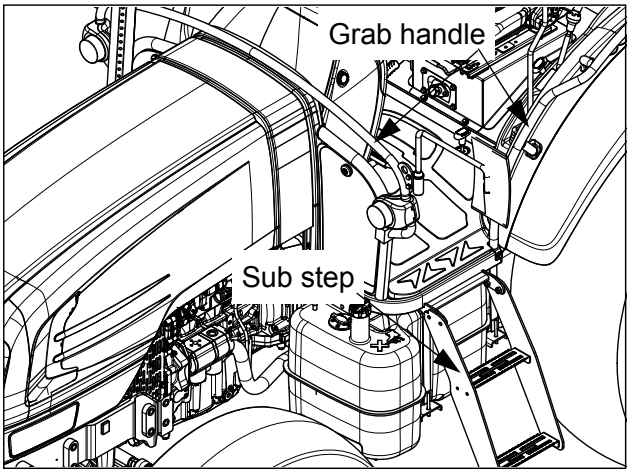


2-1. Boarding and Exiting the tractor

(1) Boarding the tractor

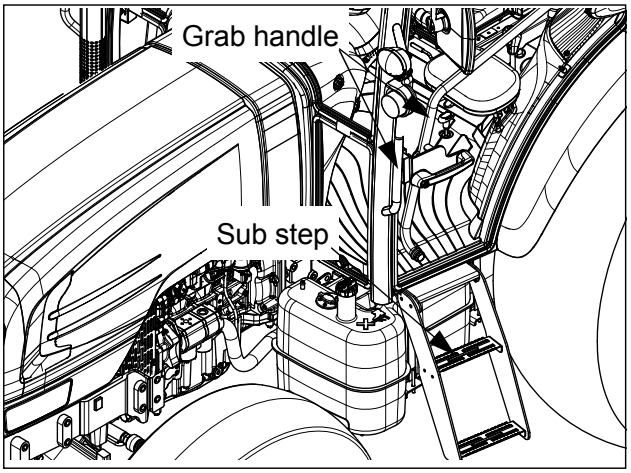
① Roll-Bar type

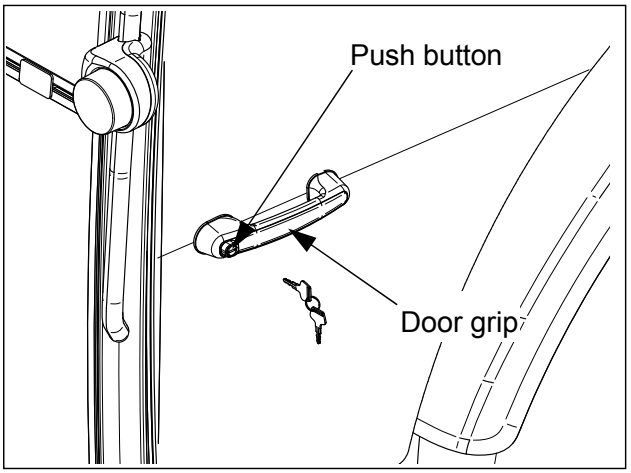
- Whenever possible, use the left-hand side step for entering.
- When boarding the tractor, use the sub-step and grab handle on the left/right fender.
- Do not jump up/down for your safety.



① Cabin type

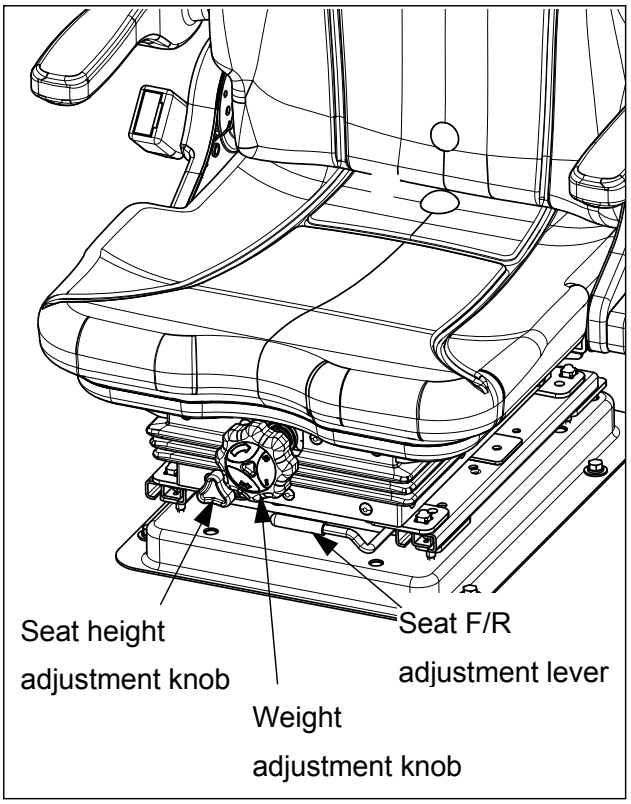
- Whenever possible, use the left-hand side door for entering.
- Release the cabin door locked with the provided key and open the cabin door after pressing the push-button.
- When boarding the tractor, use the sub-step and grab handles provided on the cabin frame and door.
- Do not jump up/down for your safety.
- When leaving the tractor, lock the cabin door and remove the key.





⚠ Caution	▶ **Operator's condition :** The persons such as patients, drunks, people on drugs, etc. are never allowed to operate this tractor. Only well educated operators can use the tractor after learning the usage of controls for moving, stopping, turning and other operating. ▶ Do not grasp the gear levers when entering the cabin from the right-hand side.

(2) Seat adjustment



- Before operating the tractor, adjust the position of driver's seat according to body size and length.
- Seat F/R adjustment lever

1) After sitting on driver's seat, move the seat F/R adjustment lever up to release the lock.

2) Move the driver's seat forward or backward depending on driver's body length.

3) Release the seat F/R adjustment lever and check the seat is locked.

- Seat height adjustment knob

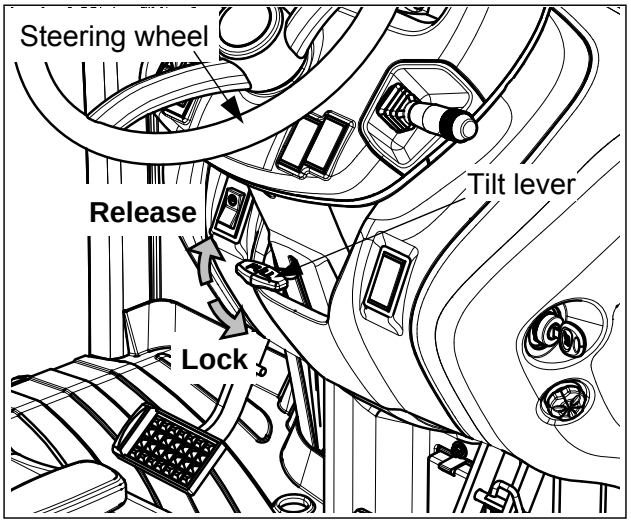
1) If you turn the seat height adjustment knob clockwise, the seat height shall be lowered.

- Weight adjustment knob

1) Adjust the seat suspension depending on your body weight by using the weight adjustment knob. If you turn the knob clockwise, the suspension stiffness shall be increased.

⚠warning	▶DO NOT put your hand under the seat while sitting. It may cause a injury by seat suspension. ▶DO NOT adjust the seat position while driving.

(3) Tilting steering wheel

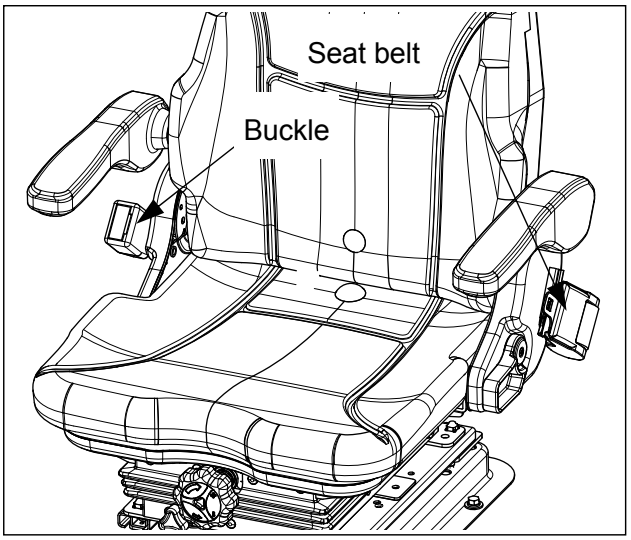


- Pull and hold the tilt lever upward to release the steering column, and tilt the steering wheel to desired position.
- Return the tilt lever to lock position, and make sure to check that steering wheel does not move forward and backward.
- Adjust the steering wheel only when stopped.

⚠Caution	▶DO NOT adjust steering wheel while driving. It may cause a serious accident.

(4) Seat belt

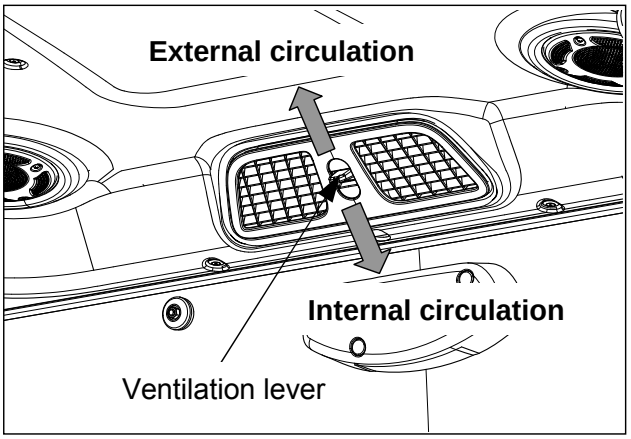
- Always wear the seat belt before operating the tractor and adjust the belt to fit the operator.
  1. Insert the seat belt end into the buckle until a “click” indicates it is properly engaged.
  2. To remove the seat belt from the buckle, press the red release button on the buckle.
- Check the seat belt regularly. If damaged or frayed, replace it with a new one.

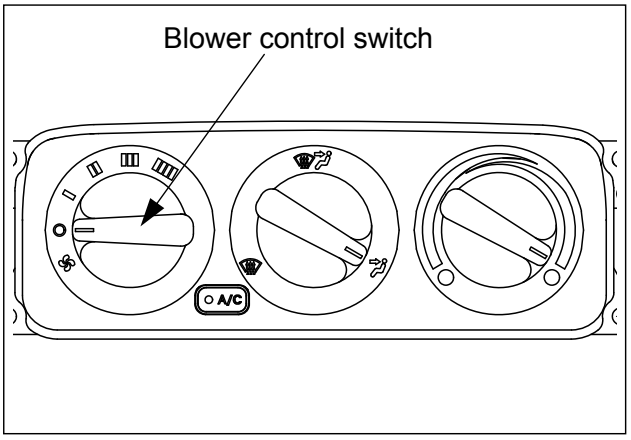


Warning	▶ If not wearing the seat belt, it may cause serious injury in case of accident. - During operation, it must be required to wear seat belt with a cab or safety frame installed. - After wearing the seat belt, adjust the belt to fit the operator. ▶ If safety frame is folded down for frame model, do not wear the seat belt.

(5) Ventilation (Cabin only)

- Air can be taken from outside or inside of the cabin by adjusting the ventilation lever.
  - **External circulation** : Air comes from outside via cabin air filters.
  - **Internal circulation** : Air can be re-circulated inside the cabin.
- To increase the air pressure inside the cabin, move the ventilation lever to external circulation and turn the blower control clockwise fully.



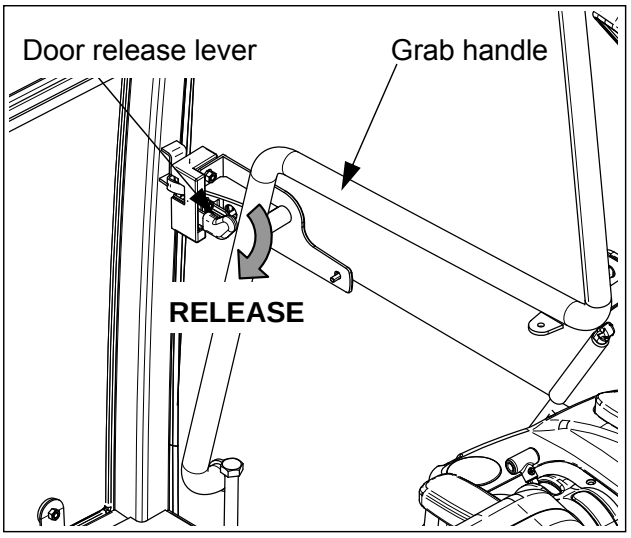


Warning	▶ DO NOT ventilate the cabin in pesticides or other hazardous chemical spraying area.

(6) Exiting the tractor

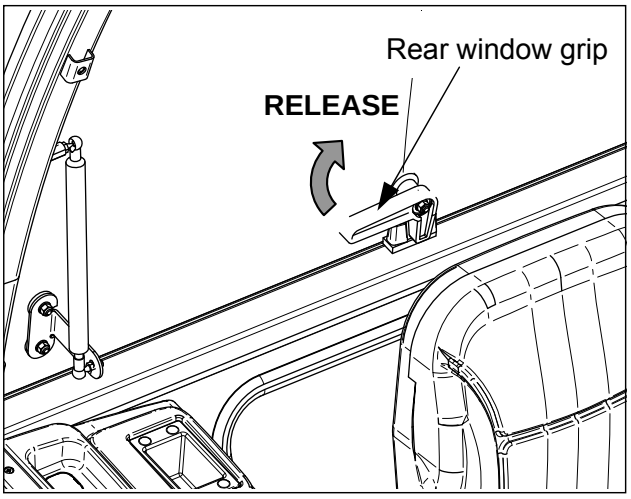
① Door (Left / Right)

- Whenever possible, use the left-hand side door for entering/exiting.
- To open the left/right cabin door, push the door release lever downward, and use the grab handle to push the door outside.



② Rear Window (for emergency)

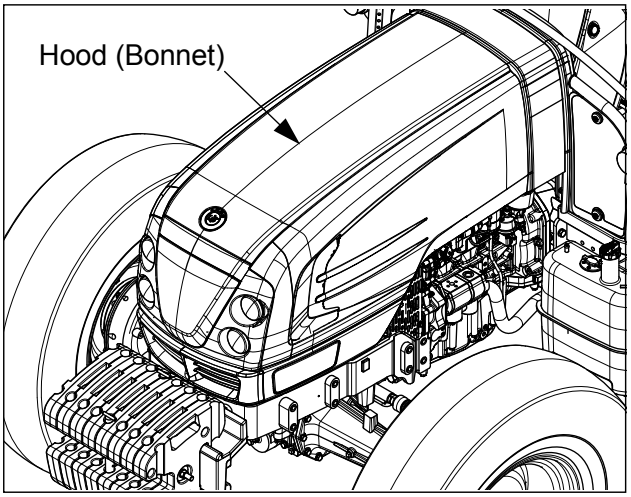
- To open the rear window, turn the rear window grip clockwise with pulling the grip
- Push the grip outside slightly.
- This rear window can be used for emergency exit or ventilation.



2-2. Safety device

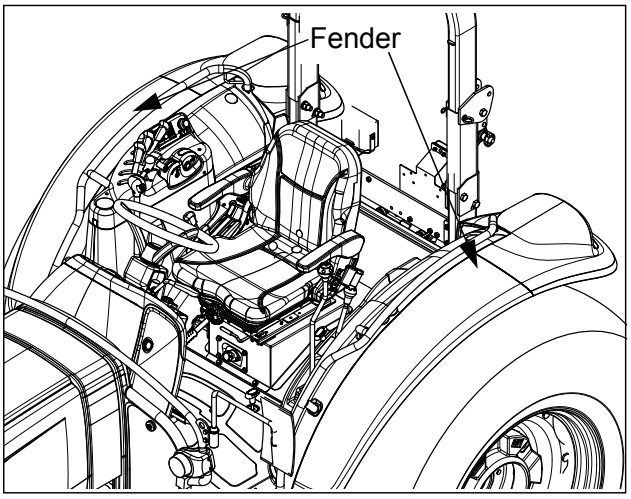
(1) Hood (Bonnet)

- Hood is a protection device to prevent an unintended access to the rotating parts around engine ; cooling fan, fan belt and rotating shaft and pulley.
- Do not remove and modify the hood.



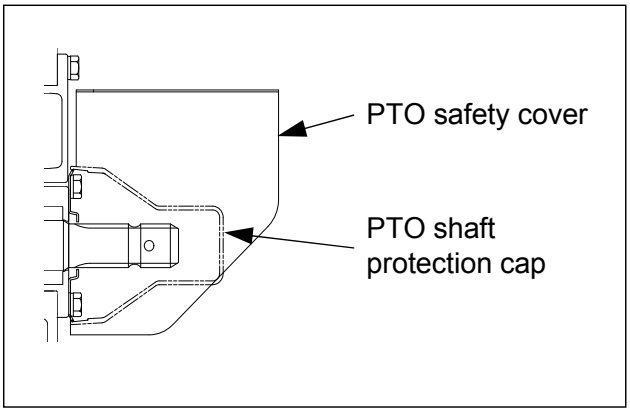
(2) Fender

- Fender is a protection device to prevent an unintended access to the rear tires and to prevent mud from irrupting to the driver.
- Do not remove and modify the fender.



(3) PTO safety cover and protection cap

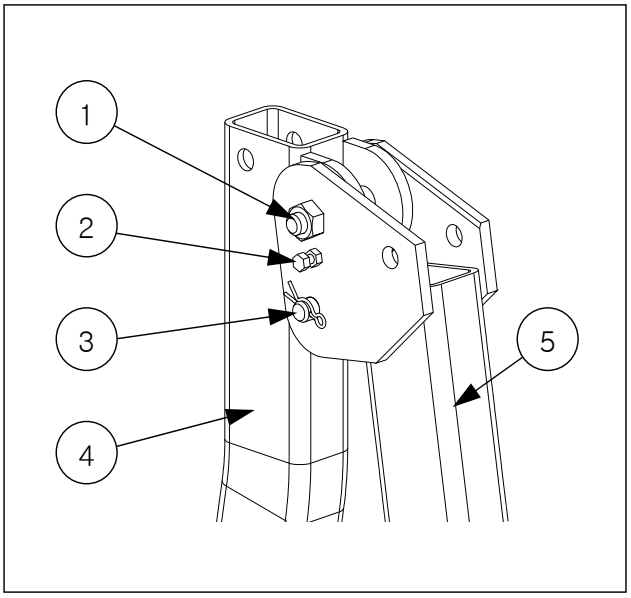
- PTO safety cover is a protection device to prevent an unintended access to the PTO shaft and to prevent an accident causing by the rotating drive shaft.
- Do not remove the PTO safety cover. If the PTO safety cover or protection cap is damaged or removed, replace it with a genuine part.
- Do not step on the PTO safety cover.
- After using the PTO shaft, apply grease and insert the PTO shaft protection cap.



⚠Warning	▶ If you contact the rotating shaft, it may cause a severe injury. - DO NOT try to touch the rotating shafts. - DO NOT remove the protection covers. - Avoid loose clothes that can easily be rolled up in the rotating shaft.

(4) Roll-Over Protective Structure (ROPS) (optional)

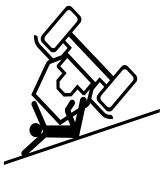
① Roll-bar (Safety Frame)



- As the Roll-bar is very important structure for driver's safety, DO NOT modify (welding, drilling, cutting, etc) or remove it arbitrary.
- When folding the Roll-bar for special work, comply with the following instructions.

1. Loosen the bolts ①, ② on both sides.
   It is not necessary to remove it completely.
2. Pull out the pins on both sides and fold upper-frame down carefully.
   Be careful of the possibility that your body might be hurt by sudden folding due to its weight.
3. Insert the pin into the holes in order to fix the Roll-bar.
4. Tighten the bolts ①, ② firmly on both sides.

- Do stand the Roll-bar up originally as soon as your special work is finished.

⚠ Warning	▶ Do not change or disassemble the Roll-bar arbitrarily for driver's safety.
	▶ Unless the Roll-bar is installed correctly, it may cause a serious accident on tractor when being overturned. - Be sure to stand the Roll-bar up firmly and assemble the bolts, pins and nuts correctly.
	▶ When folding the Roll-bar; - Do cooperate with more than 2 people when folding or standing up the Roll-bar as it's heavy. - Be careful not to be injured by sudden folding, which might occur when folding or standing up the Roll-bar, results from its weight. - Do not wear seatbelt when the Roll-bar is folded down.

② Cabin

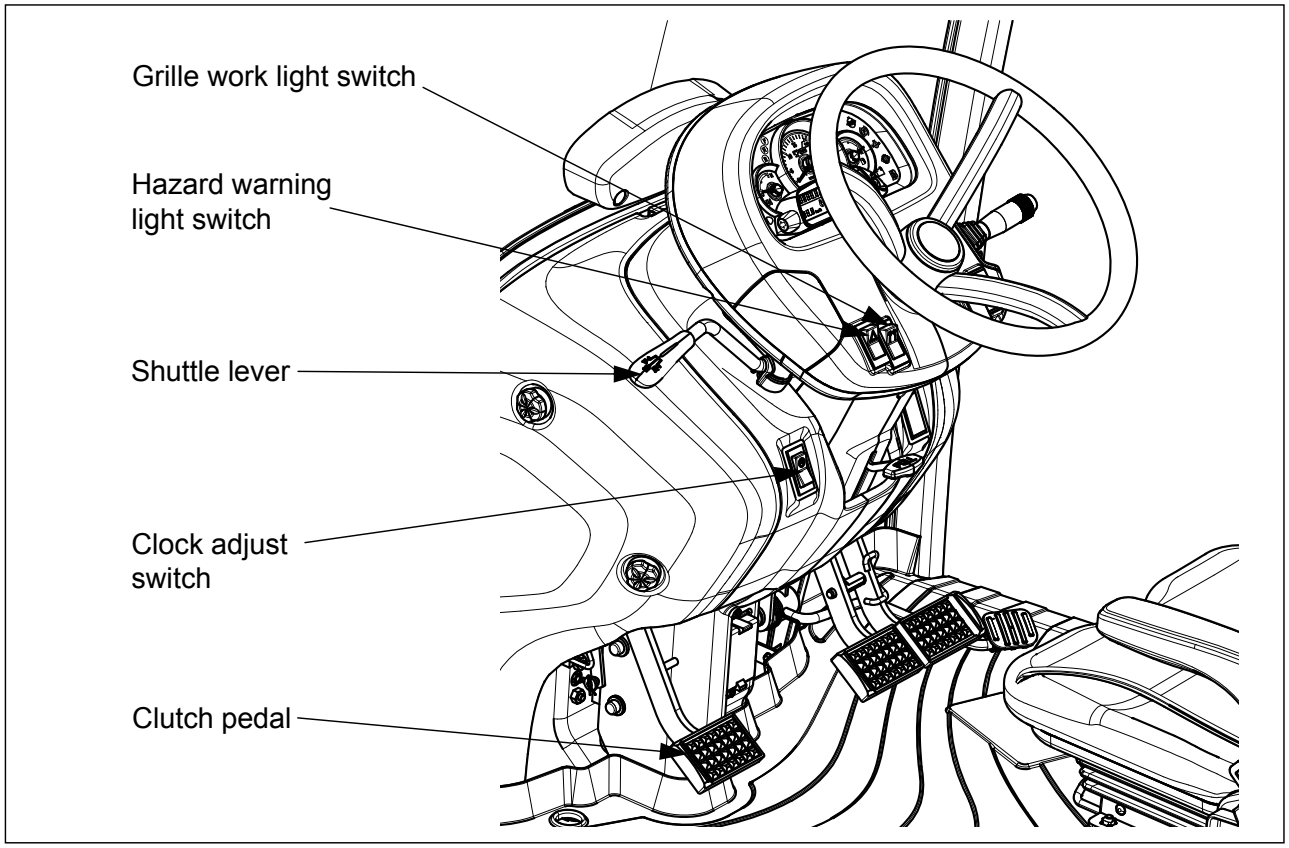
- The Protective Structure (Roll-bar or Cabin) and interconnecting components are a certified system. Any damage, Fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the Protective Structure MUST be replaced with a new one. Contact your authorized dealer for Protective Structure inspection and replacement.

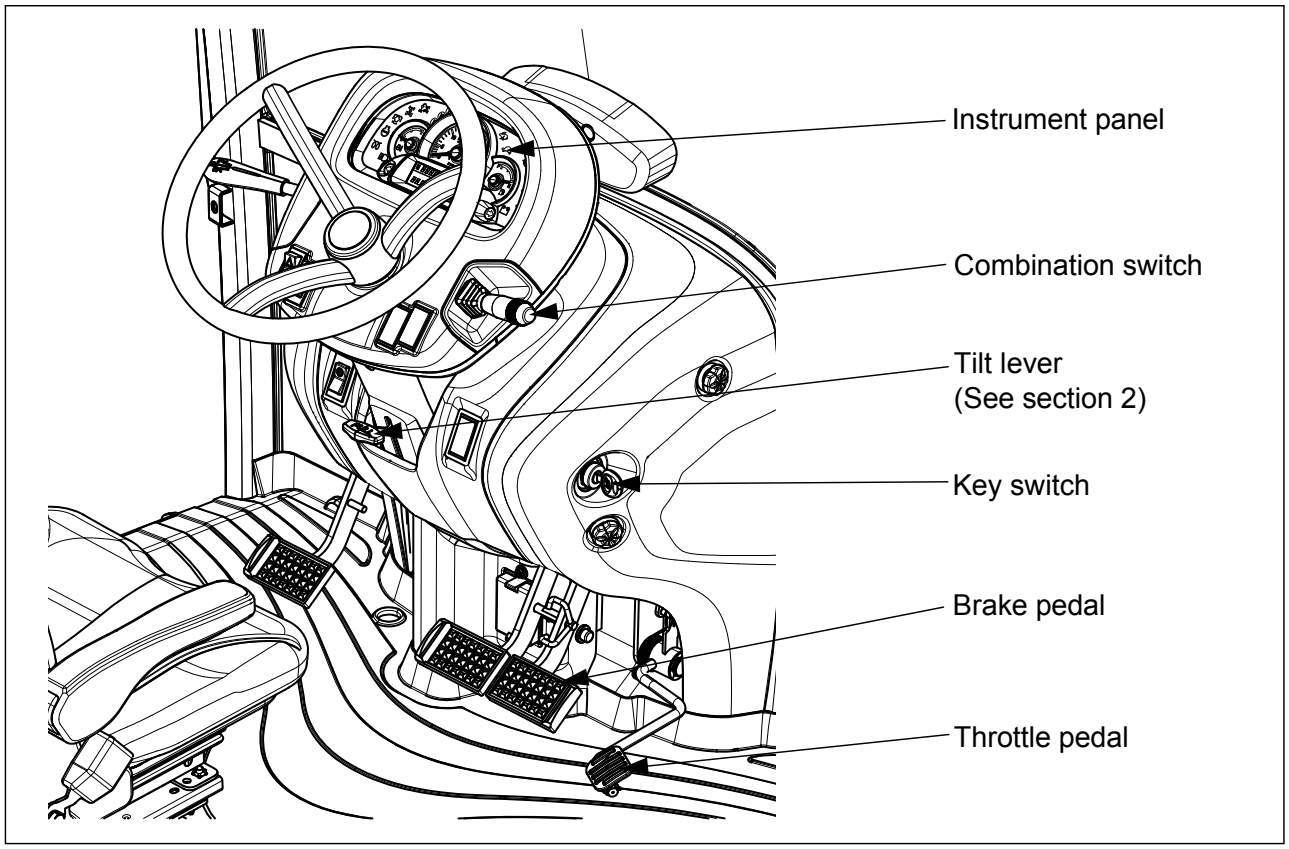
⚠ Warning	▶ As the cabin is very important structure for driver's safety, DO NOT modify (welding, drilling, cutting, etc) or remove it arbitrarily. ▶ Do not step on the fender for the maintenance of cabin roof.

3. Instruments and Controls

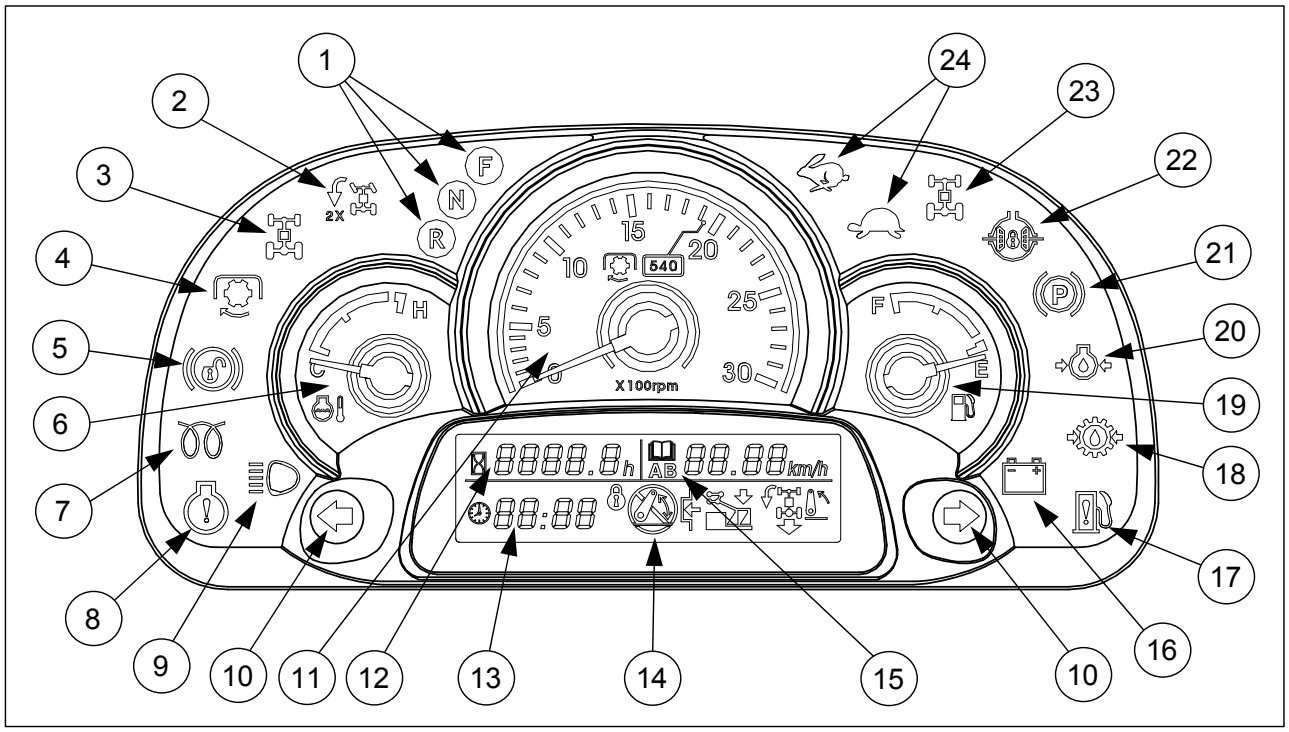
3-1. Instrument panel and Front controls

Important to owner, read carefully





(1) Instrument panel



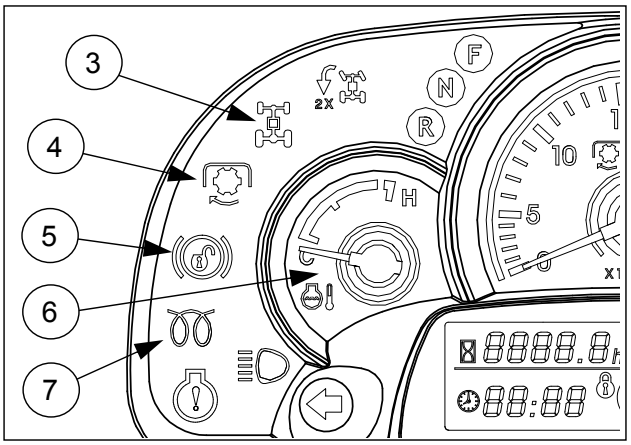
1. Forward-reverse indicator (optional)
2. Quick turn indicator (Not used)
3. 4WD indicator
4. PTO operation indicator
5. One side brake indicator
6. Engine coolant temperature gauge
7. Cold start aid indicator
8. Engine warning indicator (Not used)
9. High beam indicator
10. Turn signal indicator (Left / Right)
11. Tachometer
12. Hour meter
13. Clock
14. EHL mode display (optional)
15. Error diagnosis code display (optional)
16. Battery charging indicator
17. Fuel filter warning indicator
18. Hydraulic oil filter pressure indicator
19. Fuel level gauge
20. Engine oil pressure indicator
21. Parking brake indicator
22. Differential lock indicator
23. 4WD indicator (Not used)
24. Low / High speed indicator (optional)

1 Forward-reverse indicator (optional)

- These indicators shall be ON/OFF when operating power shuttle lever to FORWARD / NEUTRAL / REVERSE in power shuttle transmission.

2 Quick turn indicator (Not used)

- This indicator is not used.



(3) 4WD indicator

- When pressing 4WD switch to “4WD” position, this indicator shall be ON.
- When pressing brake pedals, 4WD shall be engaged automatically to brake the front wheels, and this indicator shall be ON.
  (See page 3-13)

(4) PTO operation indicator

- When the key switch is “ON” and PTO mode switch is “MANUAL” and PTO switch is “ON”, this indicator shall be ON.
- If PTO mode switch is “AUTO”, rear PTO and this indicator shall be OFF to protect PTO drive shaft when clutch pedal is depressed or the implement is lifted up over the specified limit.
  (For further information, *See page 3-14*)

(5) One side brake indicator

- This indicator is not used.

(6) Engine coolant temperature gauge

- This gauge indicates the temperature of coolant during operation.
- The closer the needle approaches “**H**”, the higher the temperature of engine coolant is.
- The coolant is very hot. When checking the coolant, comply with instructions of the section 5 “Maintenance and Lubrication” in this manual.

(7) Cold start aid indicator

- If the cold start aid device is working, this indicator shall be ON. After the indicator is OFF, start the engine.

(8) Engine warning indicator (Not used)

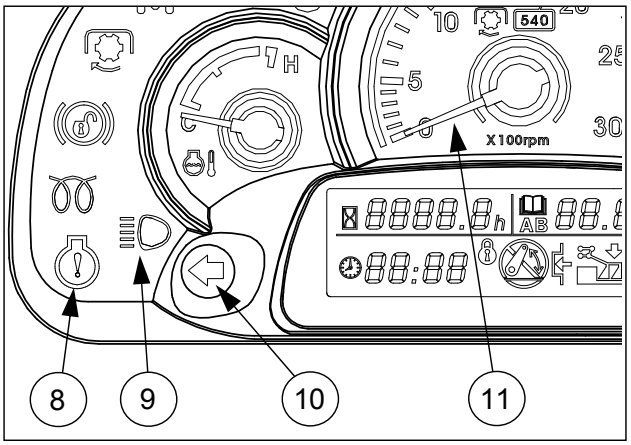
- This indicator is not used.

(9) High beam indicator

- When turning on high beam of the headlamp, This indicator shall be ON simultaneously.

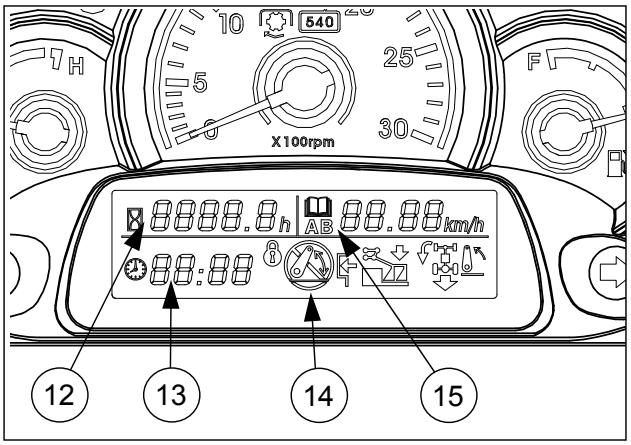
(10) Turn signal indicator (Left / Right)

- When the front/rear turn signal lights are blinked, This indicator shall be blinked simultaneously.



(11) Tachometer

- The tachometer shows the engine revolutions per minute (“30” means 3000rpm).



(12) Hour meter

- This display shows the operating hour. For example, 0019.1 means the tractor has been operated for 19.1hr (19 hours and 6 minutes).

(13) Clock

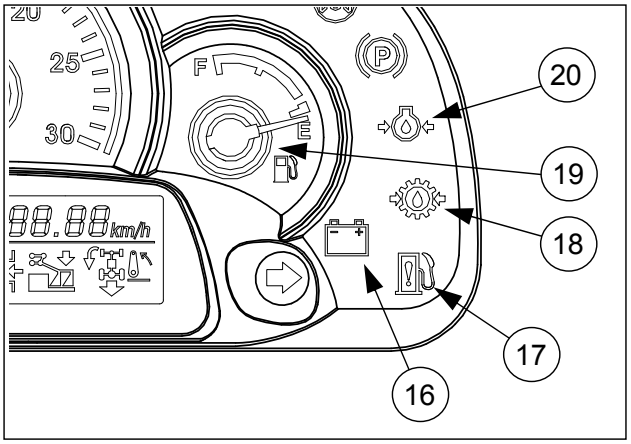
- This display shows the time.

(14) EHL mode display (optional)

- This display shows the operation state of the Electro-Hydraulic Lift (EHL). (optional)

(15) Error diagnosis code display (optional)

- This display shows error codes relating to Electro-Hydraulic Lift (EHL) or power shuttle system. (optional)



(16) Battery charging indicator

- If this indicator is ON when the key switch is ON before staring engine, this means normal.
- If the indicator is ON while the engine is running, this means there is trouble in charging system. In this case, contact your authorized dealer for check.

(17) Fuel filter warning indicator

- When there is a restriction or excess water in the fuel filter, this indicator shall be ON.
- Remove water in the fuel filter. *(See section 5-5 in this manual)*

(18) Hydraulic oil filter pressure indicator

- If oil pressure drop is increase due to the blockage of the hydraulic oil filter, this indicator shall be ON.

(19) Fuel level gauge

- This gauge indicates the remaining amount of fuel.
- If the needle indicates "**E**", fill the fuel tank immediately.

(20) Engine oil pressure indicator

- If this indicator is ON when the key switch is ON before starting engine, this means normal.
- If the indicator is ON while the engine is running, stop the engine and check the engine oil level. if the indicator is ON even if the oil level is normal, contact your authorized dealer for check.

(21) Parking brake indicator

- This indicator shall be ON when applying the parking brake.
- If shifting F/R shuttle lever forward or reverse when the parking brake is engaged, this indicator shall blink with alarming buzzer.

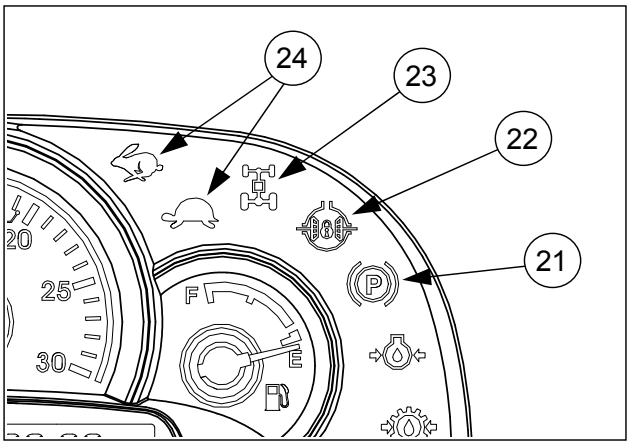
(22) Differential lock indicator

- This indicator shall be ON when operating the differential lock switch. (*See page 3-14*)

(23) 4WD indicator (Not used)

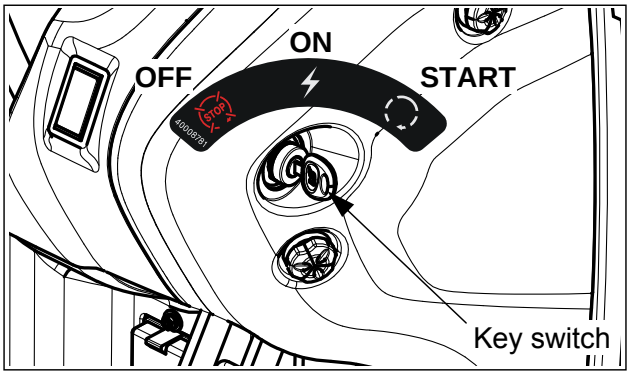
(24) Low / High speed indicator (optional)

- This indicator shall be ON/OFF in power shuttle transmission with Hi-Lo system when pressing Hi or Lo buttons. (Refer to 3-4. Power Shuttle System)



(2) Key switch

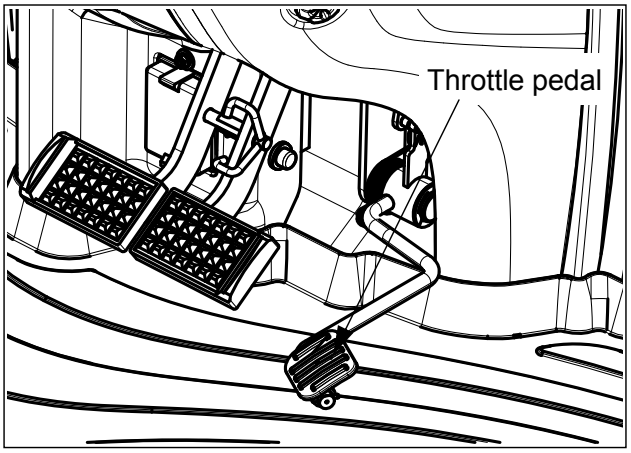
- "**OFF**" – power off (engine stop)
- "**ON**" – power on
- "**START**" – engine start



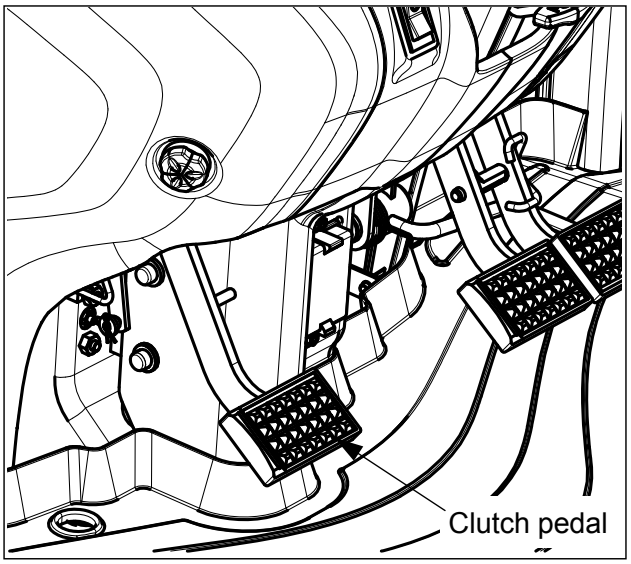
⚠ Caution	▶ As soon as engine starts, turn the ignition key to ON position immediately. If not, it may cause damage to starter motor. ▶ If the tractor is not in use, the ignition key should be removed.

(3) Throttle pedal

- This pedal is used when driving on the road.
- When using the throttle pedal, the throttle lever must be placed on "Low speed".



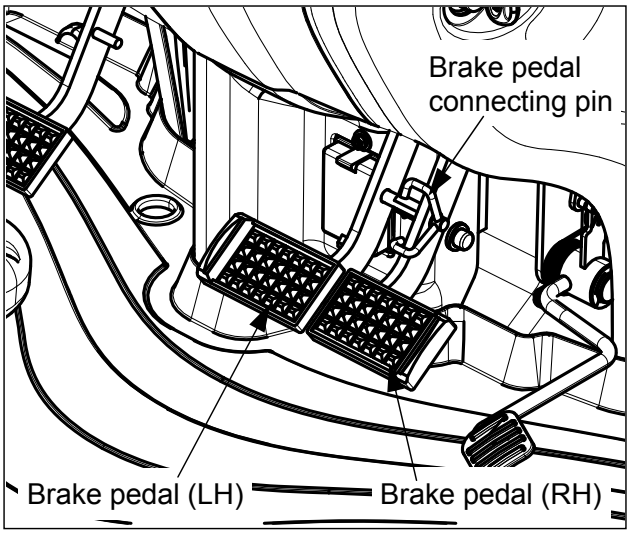
(4) Clutch pedal (Mechanical)



- This is used to engage or disengage the main transmission clutch for starting engine and shifting transmission gear.
- Depress the clutch pedal quickly and fully and release it slowly.
- If the PTO mode switch is placed on “Manual”, the PTO shaft will NOT stop, if the switch is placed on “AUTO”, the PTO shaft will stop, when depressing the clutch pedal.

Caution	▶ DO NOT ride your foot on the clutch pedal while driving the tractor. ▶ As the start safety switch is installed for the operator’s safety, depress the clutch pedal fully to start engine.

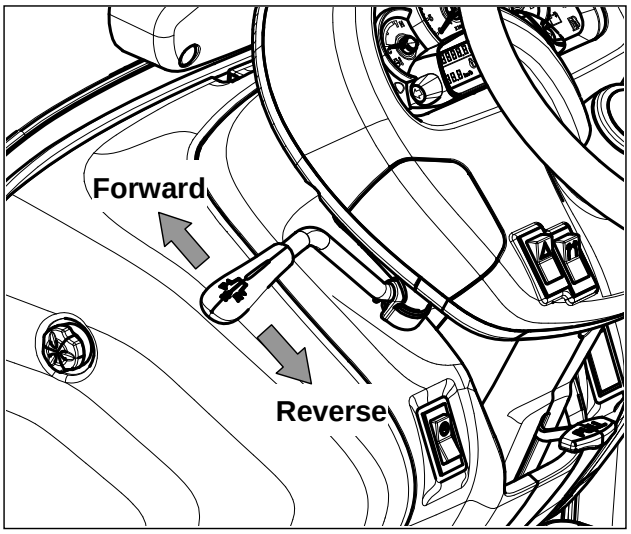
(5) Brake pedals



- When stopping, press both brake pedals together with depressing the clutch pedal.
- If disengaging the brake pedal connecting pin, left or right brake pedal can be operated independently. This one-side brake operation is useful to reduce the turning radius in the field operation.
- DO NOT press the one-side brake pedal while the differential lock is engaged. It may cause damage or failure of the rear axle.
- When brake pedals are pressed, 4WD will be engaged automatically to brake the front wheels

Caution	▶ When driving on the road, engage the left/right brake pedal by the brake pedal connecting pin. -If pressing one brake pedal when driving, the tractor may turnover. ▶ DO NOT ride your foot on the brake pedals while driving. If not, it may cause damage or failure of the brake.

(6) Shuttle lever (Mechanical)

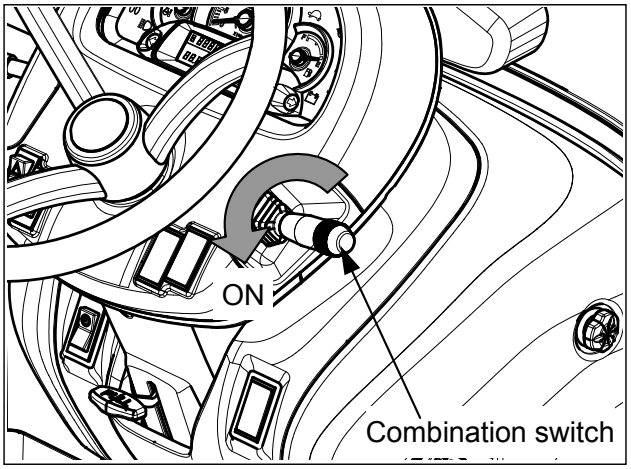


- It is used to select Forward / Reverse.
- Push the lever forward for Forward drive with depressing clutch pedal fully.
- Before shifting shuttle lever, HAVE TO STOP the tractor completely.
- Before reversing the tractor, lower engine speed and check behind you.
- If shifting F/R shuttle lever forward or reverse when the parking brake is engaged, the parking brake indicator shall blink with alarming buzzer. Before shifting the shuttle lever, HAVE TO RELEASE the parking lever.

⚠Caution	▶ The operation of shuttle lever must be done after the tractor has stopped completely. Do not operate shuttle lever while the tractor is moving, it may cause a damage of synchronizer rings and gears. (Synchro-shuttle).

(7) Combination switch

① Turning ON/OFF the lights



- To turn on/off the lights described as below, turn the switch to the position where the related symbol is marked.

○ - Instrument panel and all lights OFF

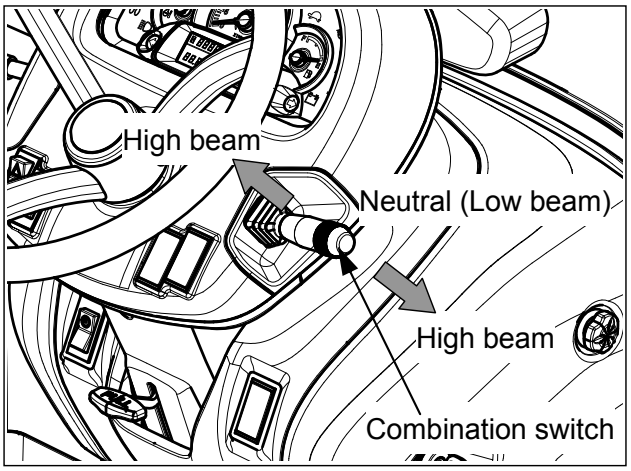
≡DC≡ - Instrument panel and side lights ON

≡D - Instrument panel, side lights and headlights (Low beam) ON

⚠Caution	▶ When passing with other vehicles in the opposite lane at night, turn the headlights to low beam not to disturb on coming cars.

② Turning ON/OFF High beam

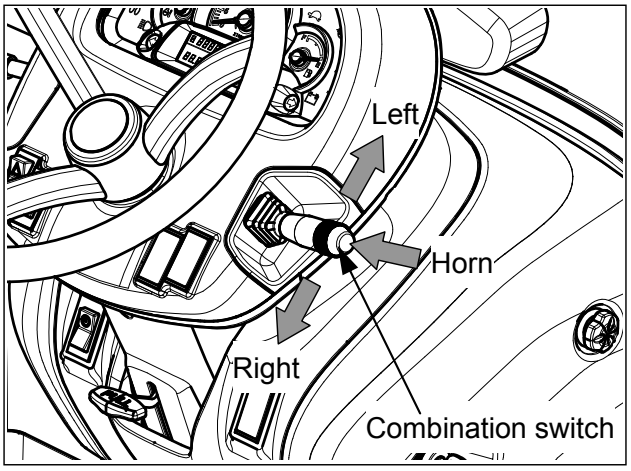
- When lifting and holding the switch, the high beam shall be ON, and if releasing the switch, the high beam shall be OFF.
- When pushing the switch downward from neutral position, the switch shall be locked and high beam shall be ON.
  To turn off the high beam, return the switch to neutral position.



⚠ Caution	▶ When passing with other vehicles in the opposite lane at night, turn the headlights to low beam not to disturb on coming cars.

③ Horn operation

- To sound off the horn, press the switch end to the inside



④ Operating turn signal lights

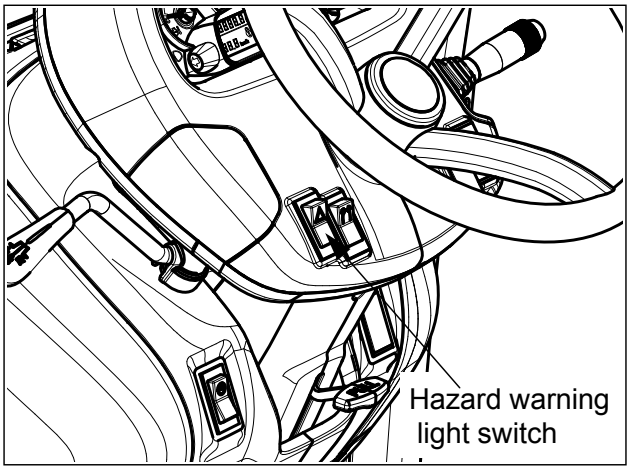
- This switch is used to give information to other vehicles when turning to the left or right.
- If turning the switch to clockwise, the right turn signal lights and the indicator are blinking.
  - If turning the switch to counter-clockwise, the left turn signal lights and the indicator are blinking.

Notice	▶ When changing direction during driving on the road, operate turn signal light switch to inform other vehicles of your direction.

(8) Hazard warning light switch

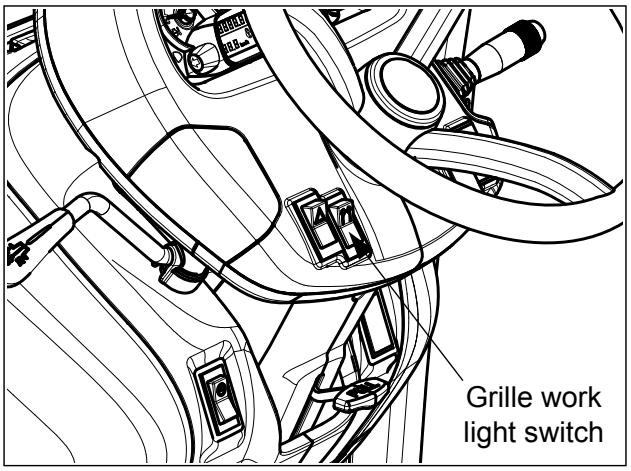
- This is used to give information to other vehicles in the emergency status. If you press the triangle switch, all turn signal lights and indicators shall be blinking.

Notice	▶ If you use the hazard warning lights for a long time, it may cause a increase of electrical consumption. Do not use the hazard warning lights for a long time.



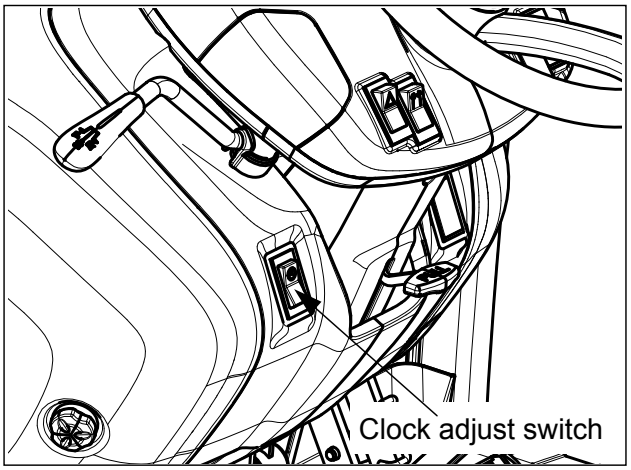
(9) Grille work light switch (optional)

- This is used to turn on/off the work light of the front grille.
- **ON** - Press the upper side(symbol part) of switch.
- **OFF** - Press the lower side of switch.



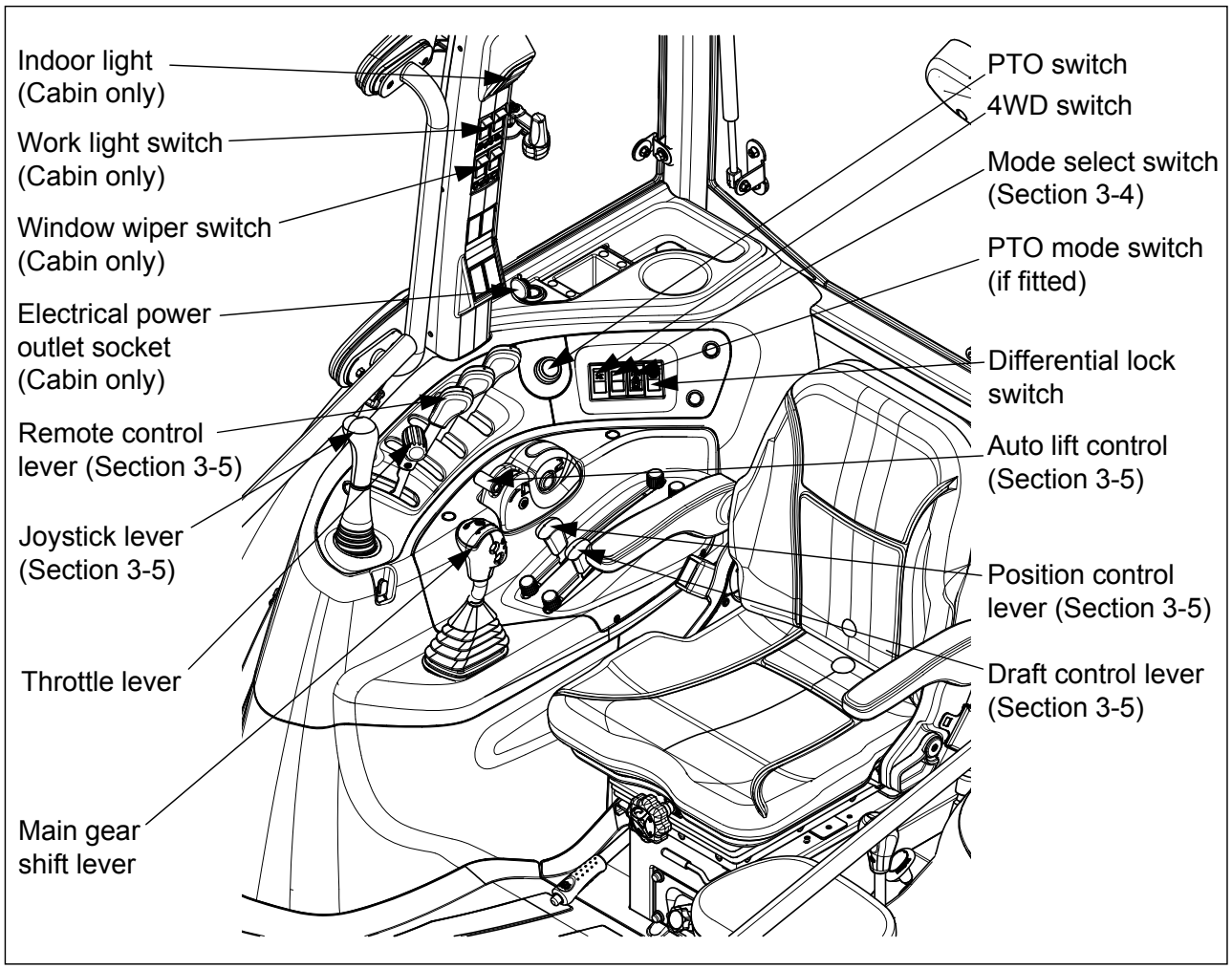
(10) Clock adjust switch

- This is used to adjust the clock on the instrument panel.
- **Hour** - Press the upper side (symbol part) of switch and then hour shall be increased.
- **Minute** - Press the lower side of switch and then minute shall be increased.



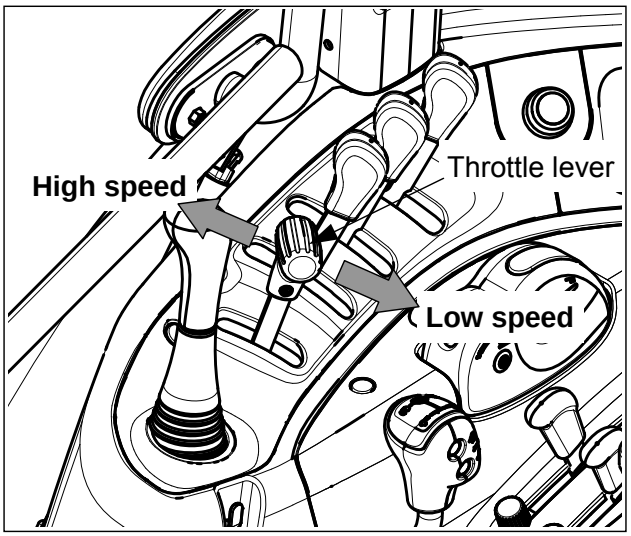
3-2. Right-hand console and Cabin pillar

Important to owner, read carefully

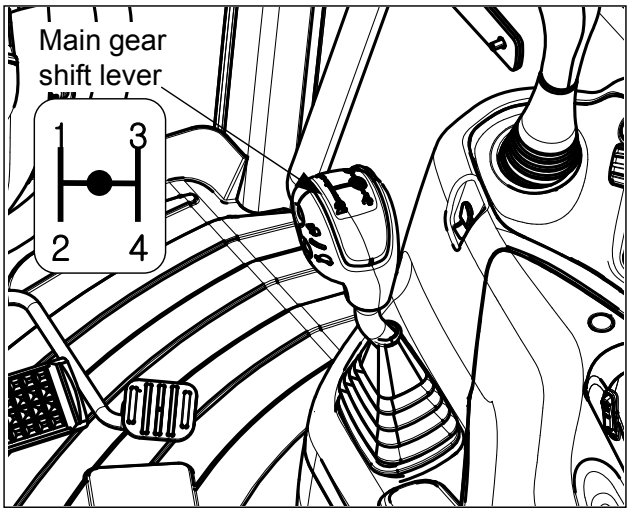


(1) Throttle lever

- It is used to control engine speed in field operation.
  Low speed : pull the lever backward
  High speed : push it forward.
- The throttle lever must be used only for work. DO NOT use while driving on public road. Use foot throttle.



(2) Main gear shift lever (Mechanical)

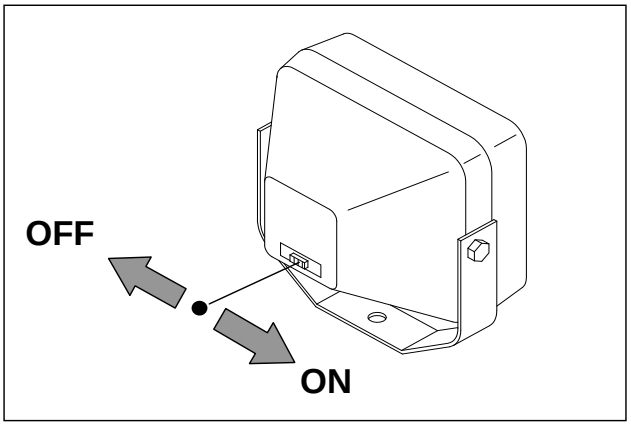


- Four stage speed selection is available.
- Main gear shift lever can be operated while driving by depressing clutch pedal without stopping tractor completely due to synchromesh gears.

Notice	▶ Operate main gear shift lever by correct H pattern. If operated diagonally, it may cause a failure.

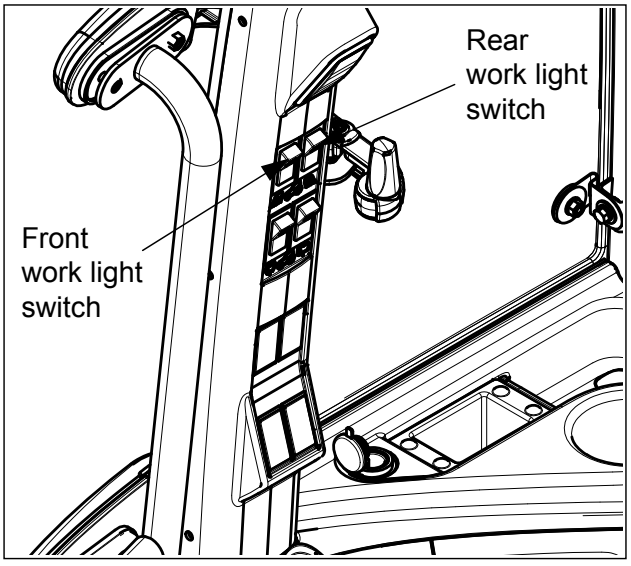
(3) Work light switch

① Frame type (Rear)



- Rear work light has a switch on its back. To turn on/off the rear work light, operate the switch as the right figure.

② Cabin type (Front, Rear)

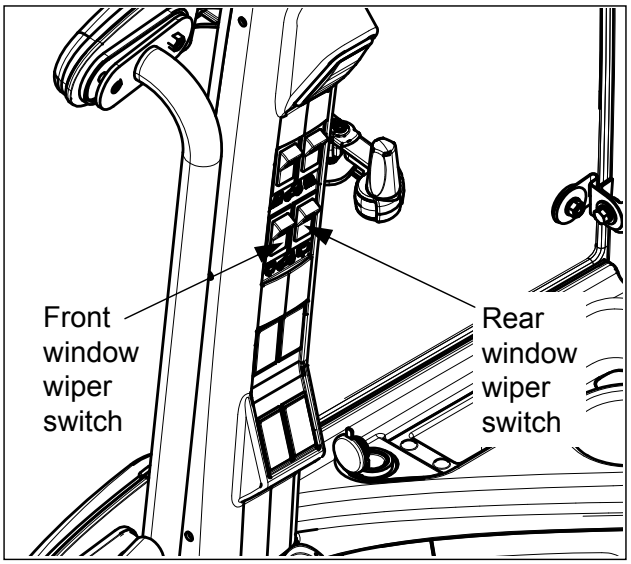


- This is used to turn on the front/rear work lights.
- **ON** - Press the upper side (symbol part) of the switch.
- **OFF** - Press the lower side of the switch

⚠ Caution	▶ When driving on road at night, do not let the rear work light stay ON. It may cause a disturbance to the driver of the following car.

(4) Window wiper switch (Cabin type / Front, Rear)

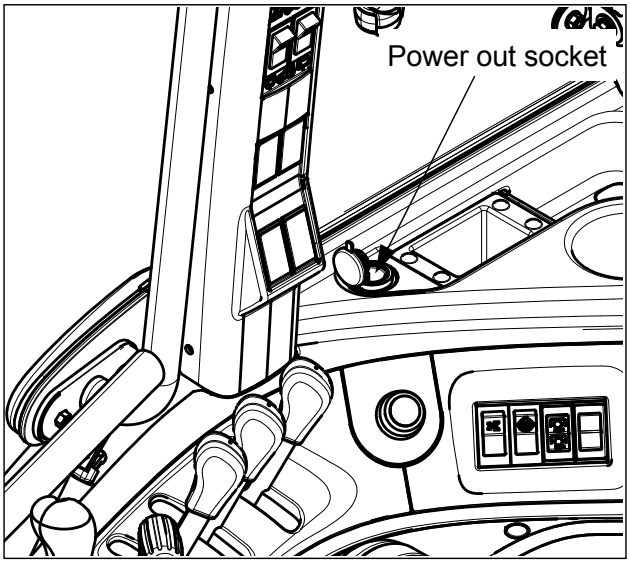
- This switch is used for operating front and rear window wiper.
- Press the upper side of the switch for operating only the front/rear wiper.
- If you press and hold the upper side of the switch again, the washer liquid shall be sprayed out.



Caution	▶ Use wind shield washer liquid for automobile in winter time. ▶ Do not operate the wiper without wind shield washer liquid, it may cause the damage to the wiper motor.

(5) Electrical power outlet socket (Cabin type)

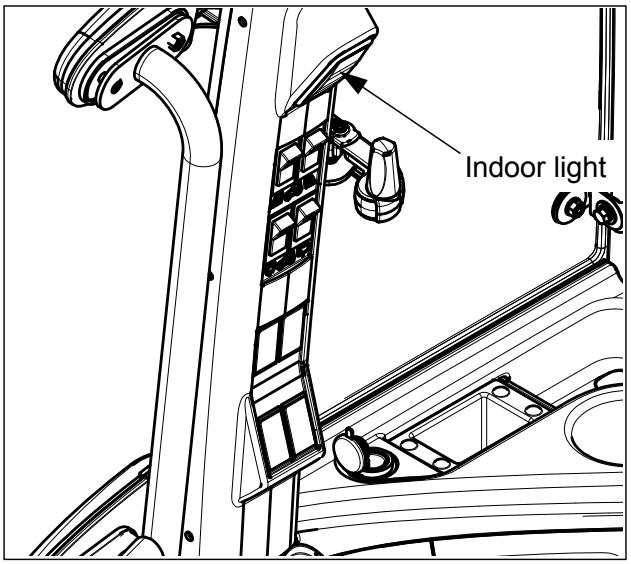
- This is the socket for power withdrawal for the charging of cigarette lighter jack or cellular phone.
- In case of using cigarette lighter jack (option)
  -If you push the cigarette lighter jack, the heating coil generates heat and shall be used as alternative of lighter.
- In case of using as power supply (12V)
  -Use the cellular phone charger less 10A.



Caution	▶ When using a cigarette lighter jack, cares must be taken not to touch the heating coil. The heat generated coil is very hot and may cause the danger of a burn.

(6) Indoor light (Cabin type)

- Press the lower side of indoor light to turn on the light.
- Press the lower side of indoor light again to turn off the light.



(7) Audio player (Cabin type)

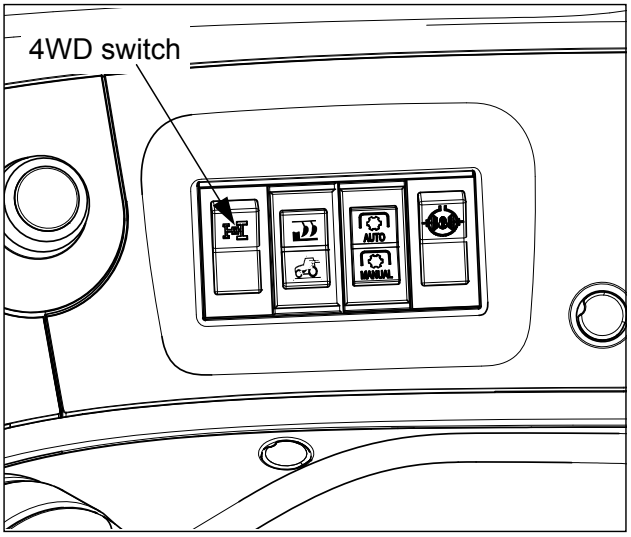
- Refer to the attached user's manual of audio player.

⚠Caution	▶ For safer operation, turn down the player volume so that you can hear sound from outside tractor. ▶ Do not use the headset while driving the tractor.

(8) 4WD switch

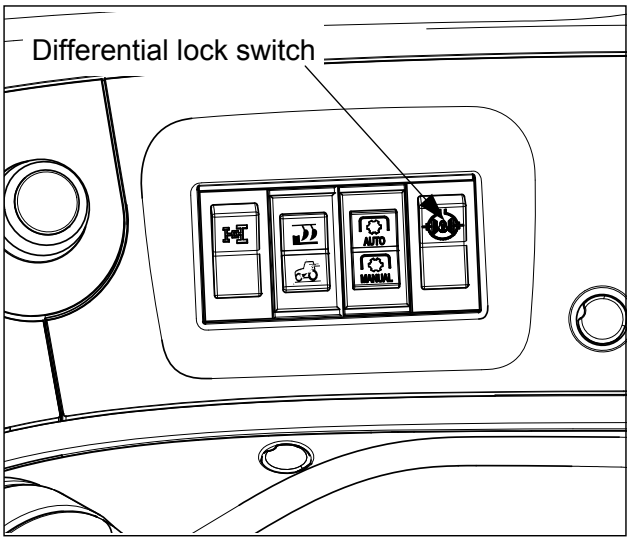
- Press the upper side of switch for Four wheel drive.(4WD)
- Press the switch lower side for 2WD.
- Front wheel drive (4WD) is effective for the followings.

  -When traction is needed in plow ground.
  -When working on slippery ground.
  -When working with tiller on hard ground.
  -When crossing a ridge



⚠Caution	▶ When driving on public road, disengage the 4WD. If not, it may cause damage of drive line and serious accident. After working, before coming out from the field, select 2WD. ▶ When driving the tractor at high speed while the 4WD is engaged, sharp steering may cause a accident.

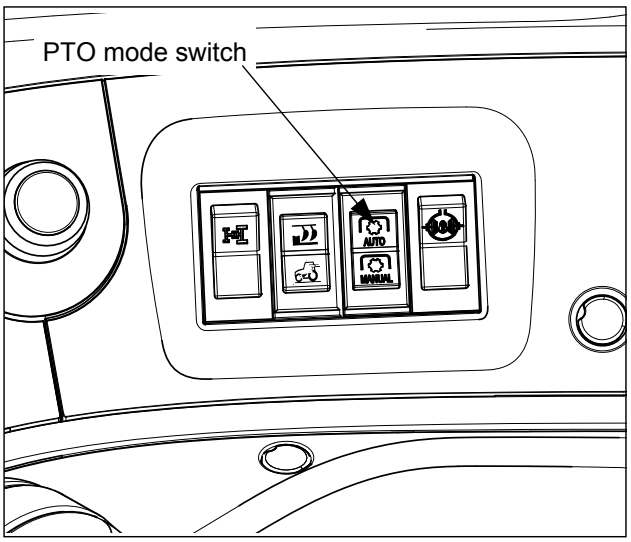
(9) Differential lock switch



- If the tractor cannot go forward as one side rear wheels are slipping, press the differential lock switch.
- Differential lock is effective for working on slippery ground, and working with a plough
- If engaged, both rear wheels will rotate at a same speed. So, It disturbs steering operation and you cannot turn.
- Push the lower side of the switch to release the differential lock. If the traction of rear wheels is equalized, the lock is released automatically.
- If the differential lock does not released, i.e. when turning to the right or left, the turning radius is larger than normal operation, depress the clutch pedal once and press one-side brake pedal slightly for a second, and then the other.

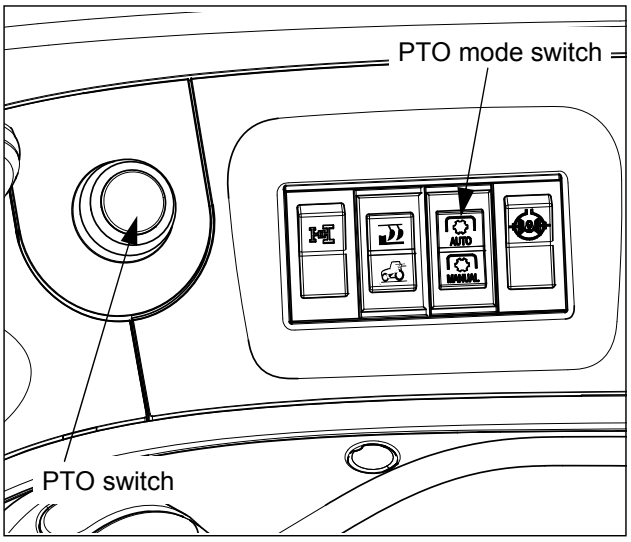
⚠Warning	▶ Do not turn the tractor while the differential lock is engaged. ▶ Do not use the differential lock while driving on the road. ▶ Stop or slow the tractor before engaging the differential lock.

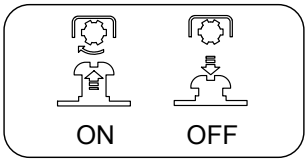
(10) PTO mode switch (if fitted)



- It is used to select "**AUTO**" or "'**MANUAL**" mode of PTO operation
- When the PTO mode switch is placed on
  AUTO : if pressing clutch pedal or lifting up position control lever over the specified position, the PTO shall be stopped.
  MANUAL : The PTO shaft shall rotate always regardless of the clutch pedal or position control lever.

(11) PTO switch





- The engine starts only when PTO switch is placed in OFF position for safety.
- After starting the engine, you must comply with the operation procedure of the PTO switch as follow.

  1. Place the PTO gear lever to desired position. *(For further information, See page 3-17)*

  2. Select the PTO mode switch to “AUTO” or “Manual” position.

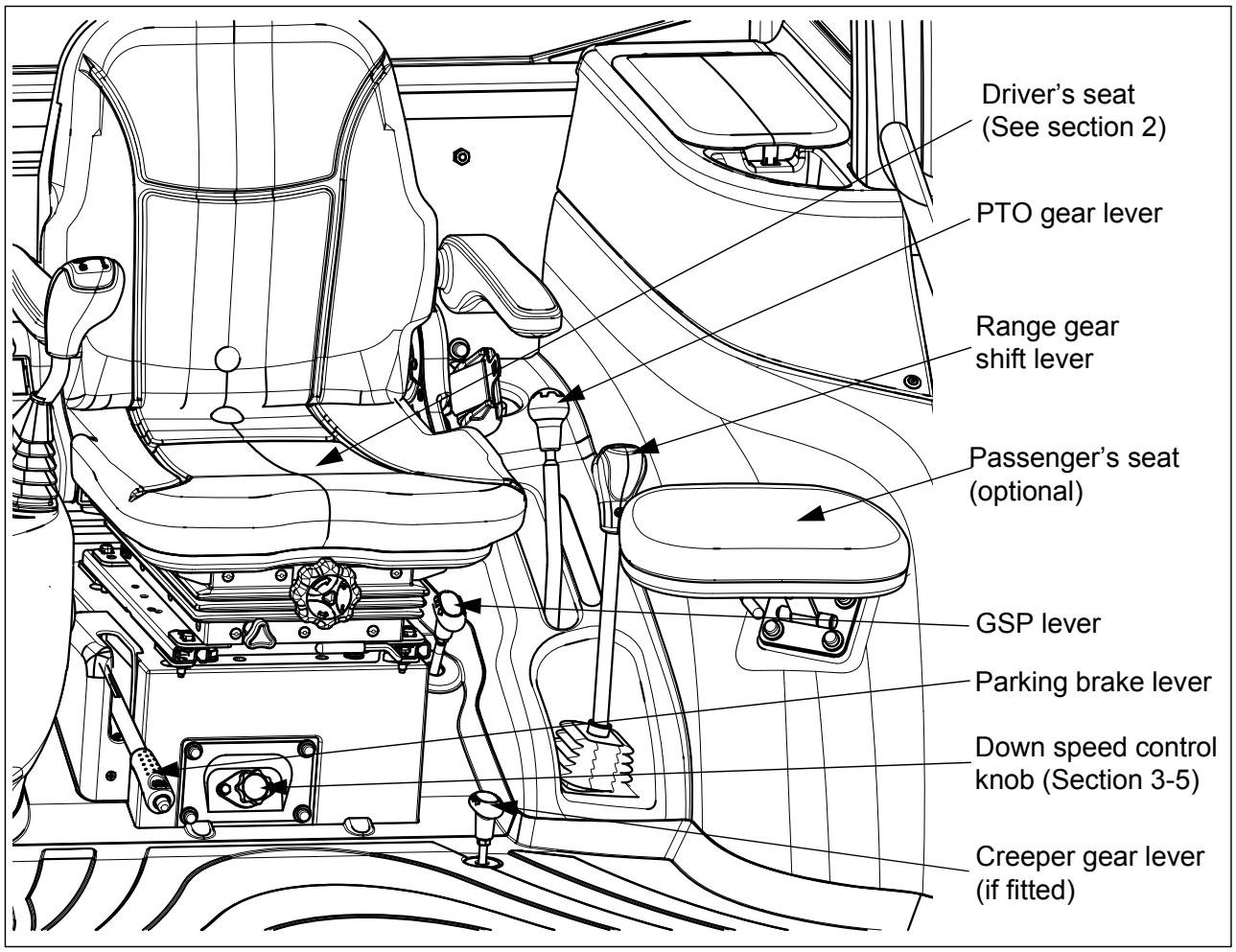
  3. Pull the PTO switch with pressing the lock button of the switch to engage the PTO. The PTO operation indicator shall be ON

  4. If you want to stop the PTO temporarily while operating, push the PTO switch in OFF position. The PTO shaft shall be stopped.

⚠Warning	▶ Before attaching or checking the PTO driven equipment, - Always place the PTO switch in OFF position, and PTO gear lever in NEUTRAL position. ▶ If the PTO mode switch is placed in MANUAL position, PTO shall rotate always even if the tractor moves backward. Pay attention to the surroundings to prevent a accident. ▶ Do not engage the PTO clutch at high engine speed. Sudden engagement can cause damage to implements and tractor. Engage PTO at low engine speed, and then raise engine speed to rated RPM.

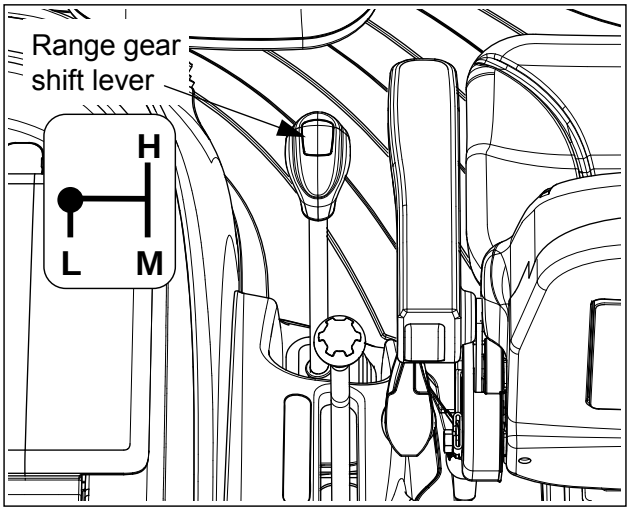
3-3. Left-hand console and Seat

Important to owner, read carefully



(1) Range gear shift lever

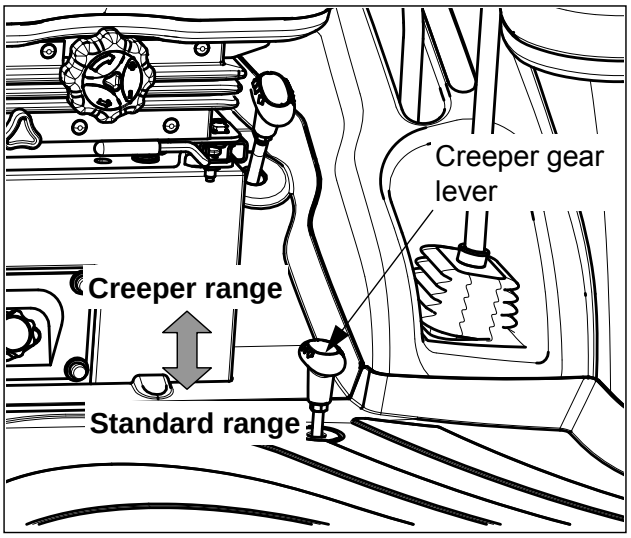
- Three speed gear selection is available.
- Range gear shift lever must be operated after the tractor has stopped completely.
- When creeper gear is engaged, "H" speed range is not available. Before shifting the range gear shift lever to "H" range, move the creeper gear (if fitted) to standard speed range.



Notice	▶ Operate range gear shift lever by correct "H" pattern. If operated diagonally, it may cause a failure.

(2) Creeper gear lever (if fitted)

- If you pull the lever upward for creeper speed range, and push it down for standard speed range.
- If the range gear shift lever is in “H” position, it is not possible to shift to the creeper speed range. After changing the range gear shift lever to “L” or “M” position, operate the creeper gear lever.

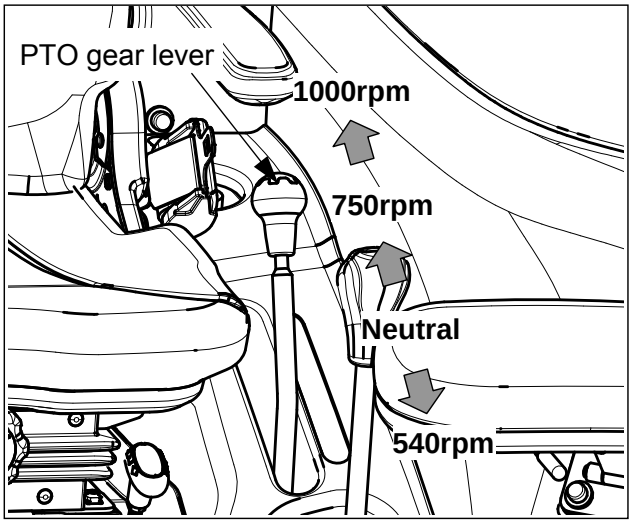


⚠ Caution	▶ As the driving force of rear axle is very high in creeper speed range, the tractor may not be stopped even if pressing brake pedals. In this case, press the clutch pedal together with pressing brake pedals.

(3) PTO gear lever

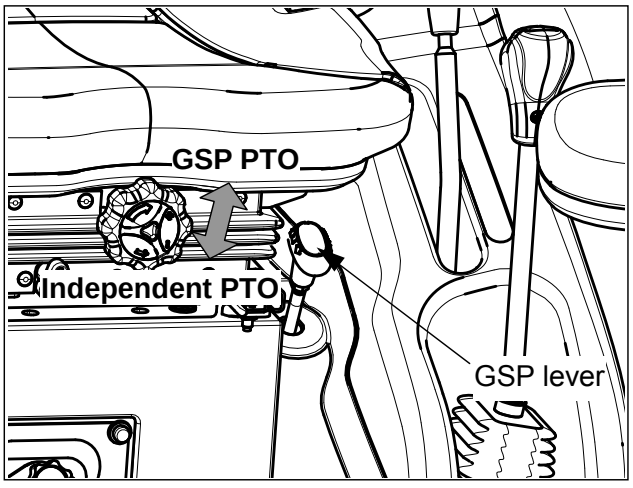
- 540 / 750 / 1000 rev/min and neutral position are available.

⚠ Caution	▶ After placing PTO switch in “OFF” and PTO shaft has stopped completely, place the lever to desired position. ▶ If the PTO gear lever is NOT engaged smoothly, lift up/down the implement to align drive shaft.

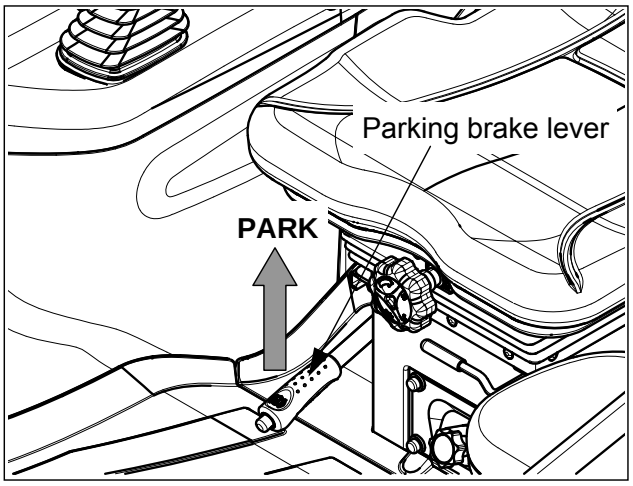


(4) GSP lever

- If you pull the lever up, the ground speed PTO (GSP) is engaged.
- If you push the lever down fully, the ground speed PTO (GSP) is disengaged and independent PTO is engaged.
- Depress clutch pedal and stop the tractor completely and then operate the GSP lever.



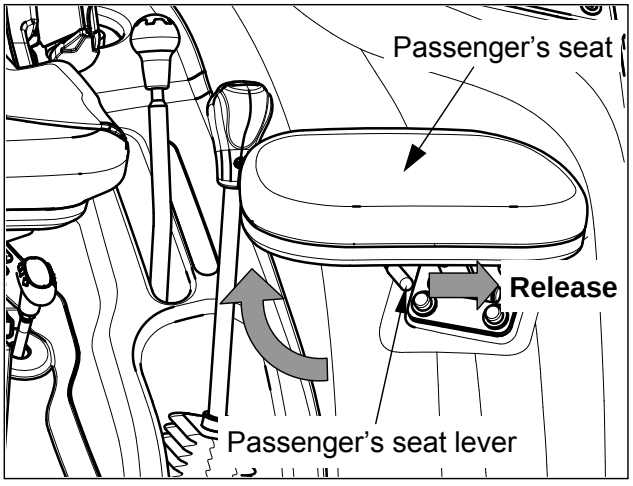
(5) Parking brake lever



- If you pull the parking brake lever while pressing the brake pedals, the parking brake shall be applied.
- Release the brake pedals slowly to check slippage of the tractor.
- It can be also used for emergency stopping.
- To release the parking brake, press the brake pedals first and press the button of parking brake and push the lever down.
- If pulling the parking brake lever upward when the shuttle lever is placed in Forward/Reverse position, parking brake indicator shall blink with alarming buzzer. If turning the key switch OFF at this time, the alarming signals shall disappear.

Caution	▶ DO NOT drive the tractor with applying the parking brake. It may cause damage to the brake and parking brake system.

(6) Passenger's seat (optional)



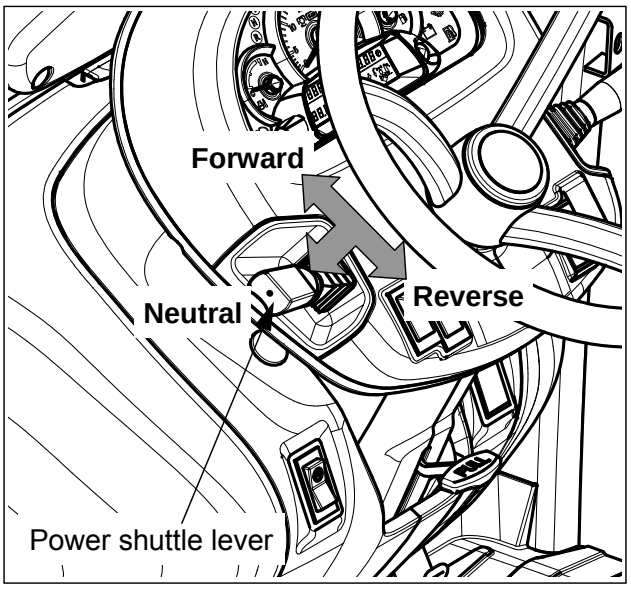
- When using the seat, just lift the seat to the locked position.
- When folding the seat, push the passenger's seat lever to the outside and fold it down.

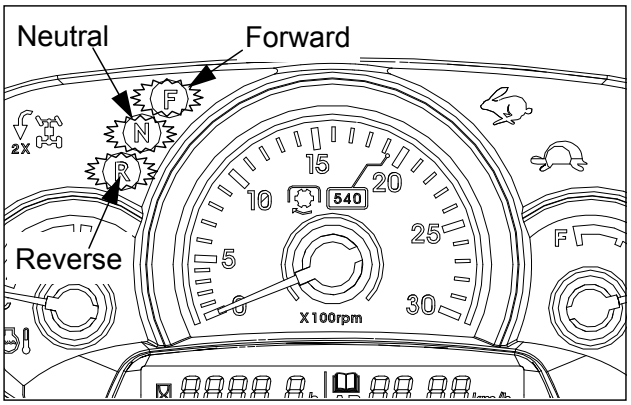
Warning	▶ This passenger's seat is an application for training or education about the tractor. DO NOT ride people on the seat while driving on road.

3-4. Power Shuttle System (PSS) (if fitted)

(1) Power shuttle lever (PSS)

- Your tractor has an advanced electro-hydraulic power shuttle system which controls the movement (Forward/Reverse/Stop) of the tractor by engaging or disengaging the multi-disk clutches.
- This system shall provide you more convenient forward-reverse operation than mechanical synchro-shuttle system.
- To change the Forward or Reverse, after lifting up the power shuttle lever, just push it forward or pull it back without depressing the clutch pedal.
- Before reversing the tractor, lower engine rpm and check behind you before backing up.
- If transmission oil temperature is below 10℃(50˚F), the neutral (N) indicator on the instrument panel shall blink to inform you that warm-up is needed. If the oil temperature goes higher than 10℃(50˚F), the indicator shall be turned off automatically.
- If the oil temperature is considerably lower than proper level, a shock might be happened due to sudden engagement of the power shuttle clutch. Before operating the power shuttle lever, be sure to warm-up the engine and transmission oil sufficiently in cold weather.
- If shifting power shuttle lever forward or reverse when the parking brake is engaged, the parking brake indicator shall blink with alarming buzzer. Before shifting the shuttle lever, HAVE TO RELEASE the parking lever.

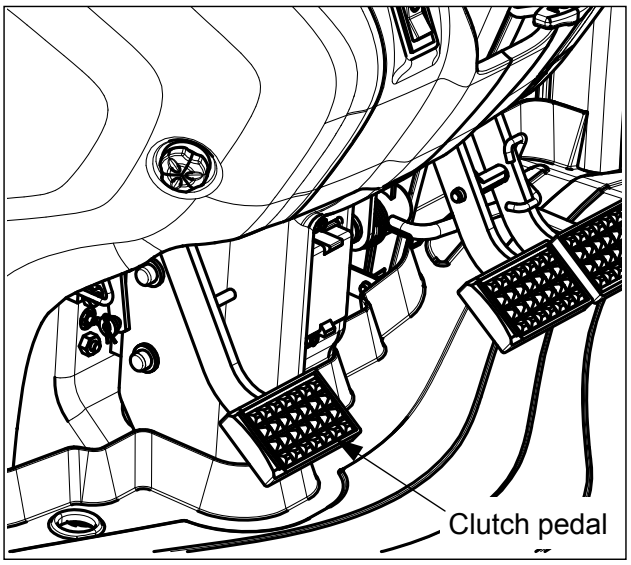




- If hydraulic pressure of the shuttle system goes lower than proper level during operation, corresponding error code shall be displayed on the instrument panel with continuous alarm. At this time, move the shuttle lever to neutral position first. DO NOT try to operate the tractor any more, because the clutch engagement under a lower pressure can cause damage to the clutch plate even for a few seconds. Contact your authorized dealer immediately to get some instructions or to check the problem. Even though the alarm sounds, the tractor can be moved restrictively for escaping from an emergency state.

⚠ Caution	► Before shifting the main gear shift lever or range gear shift lever, depress the clutch pedal fully to disengage the clutch completely. If not, it may cause damage to the transmission gear. ► To start engine, HAVE TO place the power shuttle lever in NEUTRAL position and place the PTO switch in OFF position, and then depress the clutch pedal fully. ► Before operating the shuttle lever, you should sit correctly in the driver's seat. ► Before changing the direction of the tractor by using the shuttle lever, be sure to check the safety condition of your directions, especially in reverse. ► It is dangerous to shift the shuttle lever in high speed drive. Before changing direction, it is necessary to reduce the driving speed. If not, it may cause fatal accident and damage to the power shuttle clutch and transmission drive line. ► Proper transmission oil temperature is necessary to the performance of the power shuttle system. Be sure to warm-up the tractor until the blinking of the neutral indicator is stopped and do not operate the tractor hastily, especially in cold weather. ► Park the tractor on level ground and apply the parking brake. If you have to park the tractor on a slope, apply the parking brake, apply the wheel chocks to the wheels. Engaging low speed gear is NOT useful to protect the slippage of the tractor having the power shuttle system.

(2) Clutch pedal (PSS)

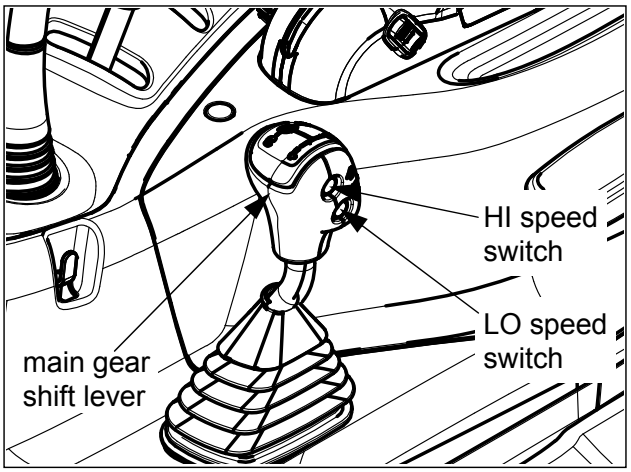


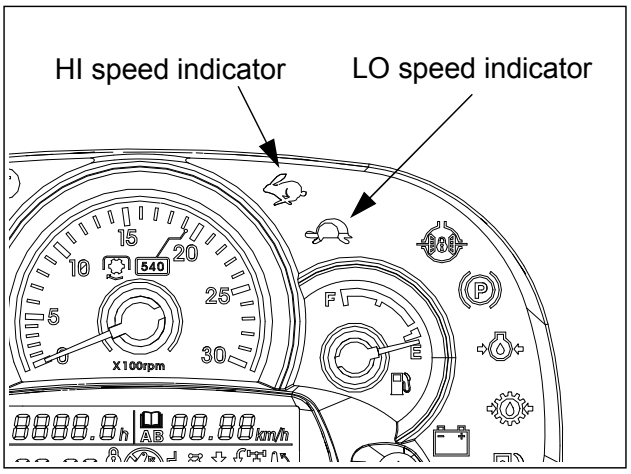
- This pedal is used to engage or disengage the engine power for engine start, transmission shift and stopping tractor.
- To disengage the clutch, depress the clutch pedal fully. If PTO select switch is placed on “AUTO” and clutch pedal is fully depressed, the PTO shaft shall be stopped.
- If the clutch pedal sensor has trouble or an error, the engagement or disengagement of the clutch is NOT smoothly operated and it’s corresponding error code is displayed on the instrument panel with intermittent alarm.
  In this case, the tractor can be moved by using the power shuttle lever. After moving the tractor to safe area, contact your authorized dealer for check.
- To protect the radical wear of the clutch, if the engagement time is prolonged over 6 seconds, an alarm shall happen, and if prolonged over 8 seconds, the clutch shall be disengaged completely. In this case, operate the shuttle lever again from neutral position or depress the clutch pedal fully one time to recover the clutch system.
- When driving the tractor on a slope, especially with heavy loaded implements, select a suitable driving speed to start the tractor. Appling high engine rpm and long-lasting clutch engagement at a high transmission gear ratio can cause serious damage to clutch pack.

⚠ Caution	► Depress the clutch pedal quickly and fully, and release it slowly. ► When starting the engine, depress the clutch pedal fully. If not, the engine may not start due to interlocking of the start safety switch for user’s safety. ► Do not ride your foot on the clutch pedal while driving. ► If the engagement time is prolonged over 8 seconds on a slope, the engine power shall be cut off by safety interlock system. It means that tractor can slip down and your special care must be taken. At this time, press the brake pedals immediately and recover the power shuttle system by depressing the clutch pedal fully or Re-operating the shuttle lever from the neutral position.

(3) HI-LO select switch (PSS)

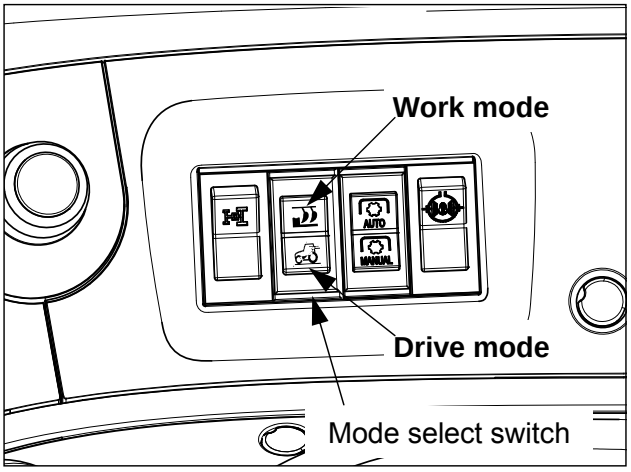
- If “LO” speed switch is pressed, “LO” speed indicator (turtle symbol) on the instrument panel shall be ON, and you can drive the tractor with standard speed which is decided by main gear shift lever and range gear shift lever.
- If “HI” speed switch is pressed, “HI” speed indicator (hare symbol) on the instrument panel shall be ON, the driving speed of the tractor is faster than “LO” speed by 1.2 times.
- When working with tiller or plow in the ground, begin to work in HI speed drive that is properly combined with the main gear shift lever and range gear shift lever. if engine speed drops due to increased loads, press the LO speed switch to escape the loaded condition. If the engine speed is recovered to the pre-defined speed, press the HI speed switch again.





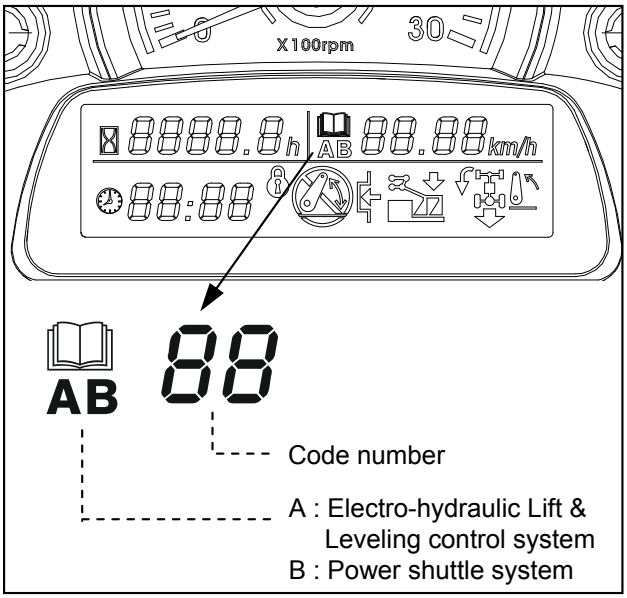
(4) Mode select switch (PSS)

- This switch is used for selecting the engagement time of the power shuttle clutch. This switch has two modes, “**Work mode**” and “**Drive mode**”.
- If you select the “Drive mode”, the engagement time of the clutch shall be set in most suitable condition for driving.
- If you select the “Work mode”, the engagement time of the clutch shall be shorter than engagement time of the “Drive mode” and it is useful in the work field that faster forward/reverse changes are required, but engagement shock may be slightly increased.



(5) Error Diagnosis Code (PSS)

- If the sensor or valve relating to the power shuttle system has failed, the error code shall be displayed on the Instrument panel as shown in the figure.
- In case of several errors, the errors shall be displayed repeatedly every 1 second. In this case, record all error codes.
- And, contact your authorized dealer for check and tell the error code.



Error code	Description
B01	Power shuttle lever circuit short
B02	Clutch pedal sensor circuit short
B03	Oil temperature sensor circuit short
B04	Forward valve solenoid circuit cut-off or short
B05	Reverse valve solenoid circuit cut-off or short
B06	Proportional Reducing valve solenoid circuit cut-off or short
B07	Lubrication valve solenoid circuit cut-off or short
B08	Hi-speed valve solenoid circuit cut-off or short
B11	Power shuttle lever circuit cut-off
B12	Clutch pedal sensor circuit cut-off
B13	Oil temperature sensor circuit cut-off

3-5. Hydraulic system

(1) Safety precautions

- Hydraulic oil leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury, comply with as below.
  -. Relieve all pressure before disconnecting hydraulic lines.
  -. Before applying pressure, make sure all connections are tight and components are in good condition.
  -. Never use your hand to check for suspected leaks under pressure.
  -. If injured by leaking fluid, get medical attention immediately.
- The hydraulic hoses and fittings on your tractor meet engineering specifications for the particular function. When replacing damaged parts, use only manufacture authorized service parts.
- Care in hydraulic hose installation is a must:
  -. Make sure pressure is relieved before starting installation procedure.
  -. DO NOT kink or twist a hose, failure may occur. Properly route the hose.
  -. Have a certified hydraulic technician install the hose.
  -. Remove air from the hydraulic system after installing any hydraulic component.
- Periodically check hydraulic system for leaks or damaged parts - kinked, crushed, flattened, hard blistered, heat cracked, charred, twisted, soft or loose covered hoses and fittings.
- DO NOT pull or apply external forces to the hose. The hose may fail and cause injury.
- Keep all persons away from the working area. If a hose fails, mechanisms controlled by fluid power can become hazardous. Lifted mechanisms can fall to the ground, steering system may fail, etc.
- Stay clear of a pressurized hose assembly that has blown apart. Hose fittings can be thrown off at high speed and a loose hose can whip around with great force.
- Hydraulic oil can reach high temperatures. Allow fluid to cool before servicing the system.
- Vibration can reduce hose service life. Make sure all retaining clamps and/or devices are secured.
- Environmental conditions can cause hose and fittings to deteriorate. Inspect hydraulic hoses periodically. Replace worn or damaged hoses and fittings.
- Before checking or repairing the hydraulic system, make sure the engine is stopped, and all the transmission gears are in neutral, and lower the implements to the ground.

Warning	▶ Before removing hydraulic pipes or hoses and other parts, make sure to check that hydraulic pressure is relieved completely. The leaks of pressurized oil can cause a fatal physical injury.
	▶ Use proper protection equipments, before servicing hydraulic system.
	▶ Before connecting or disconnecting the hydraulic quick coupler, lower the implements to the ground, and check that hydraulic pressure is relieved.

(2) Steering system

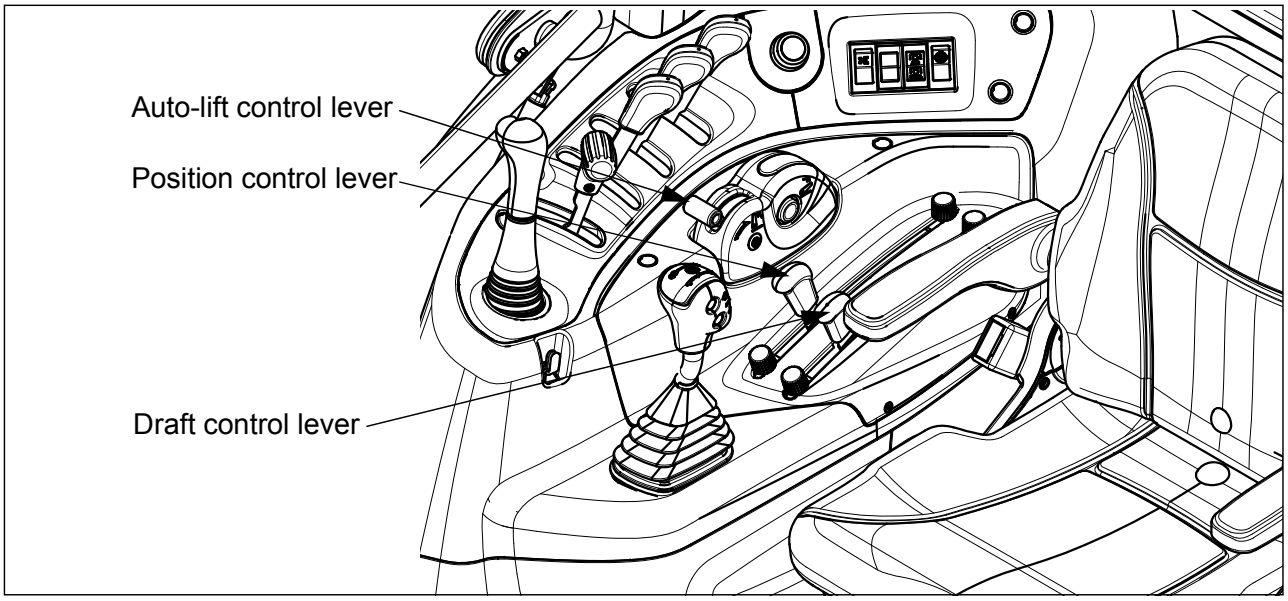
- The hydraulic steering system controlled by fluid power provides you more convenience to operate the steering wheel.
- Notices when using the steering system.

1. If there is too much of a load in front loader bucket, it could be difficult to operate the steering wheel. In this case, reduce the size of the load.
2. After turning the steering wheel fully, do not turn the steering wheel to the same direction again. As the unnecessary force is applied, this could damage to the steering system. Especially, DO NOT operate the steering wheel by force if the front wheel mired in the ditch. In this case, the rim could be affected and damaged.
3. If it sounds abnormal when operating the steering wheel, this means that there is some air in the steering components and line. In this case, turn the steering wheel to the left and right fully and hold it for about 5 seconds, and the air should bleed out and if abnormal noise does not stop. If it's not cleared, contact your authorized dealer for repair.
4. When starting engine in cold weather, a abnormal noise may occur. In this case, warm up the tractor before using to reduce the oil viscosity.
5. If you use the tractor for a long time while turning the steering wheel fully, the oil temperature will increase which may cause the reduction of the product life or the failure of hydraulic and steering system.

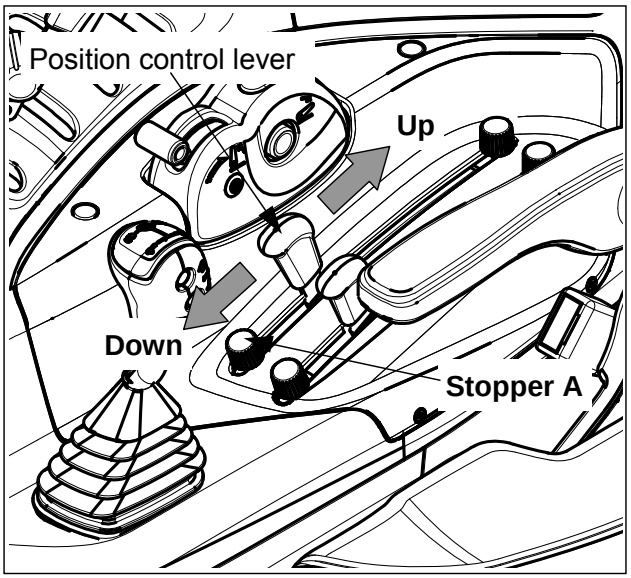
Notice	▶ If the engine stops, the operation of steering wheel becomes hard to turn and causes steering not to work. But this does not mean a failure. ▶ If you turn the steering wheel while driving, the steering wheel does not return back automatically.

(3) Hydraulic lift control (Mechanical Hydraulic Lift, MHL) (if fitted)

- Hydraulic lift device can work by position control, draft control and mixed control mode.



① Position control



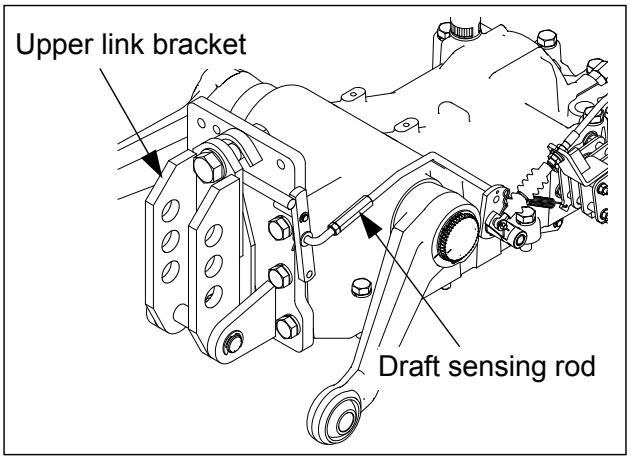
- To set the position (height) of the rear implement, move the position control lever up/down during the engine is running. Generally, this lever is used for tiller, fertilizer distributor, mower, rake and other rear implements.

1.Push the position control lever forward and let the implement down by its own weight.

2.Move up the lever to desired position, the rear implement shell be located on the position corresponding to the lever position.

3.To set the lowest position of the lever, Turn stopper A counter-clockwise, move and lock the stopper A at desired position.

② Draft control



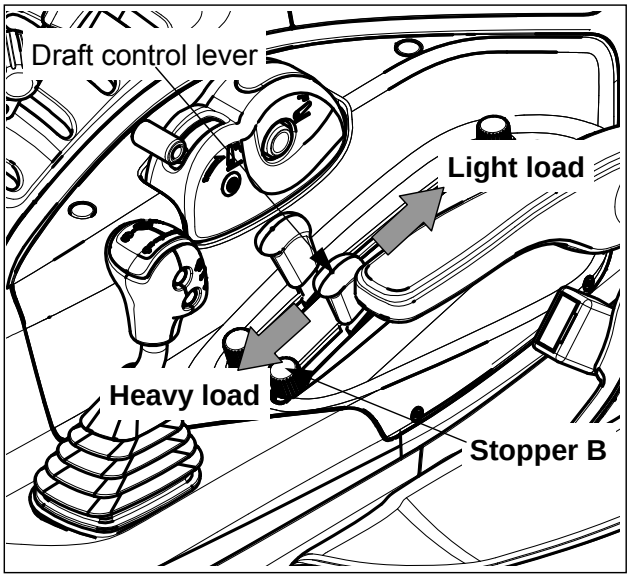
- The working depth of the implement under the draft control is controlled automatically by the draft load of the implement that detected from draft load sensor bracket and transmitted to the lift control valve. Generally, this mode is used for the implement which receives the draft load.
  In this case, operate the lever as follows.

1.Remove the draft sensor stopper of upper link bracket.

2.Move the position control lever forward fully (Down) and let the implement down by its own weight.

3.The draft load to lift control valve shall be determined according to the position of draft control lever.
  That is, the more the lever moves back (up), the more the implement rises up by light draft load.

4.If you want to lift the rear implement, use the position control lever instead of the draft control lever

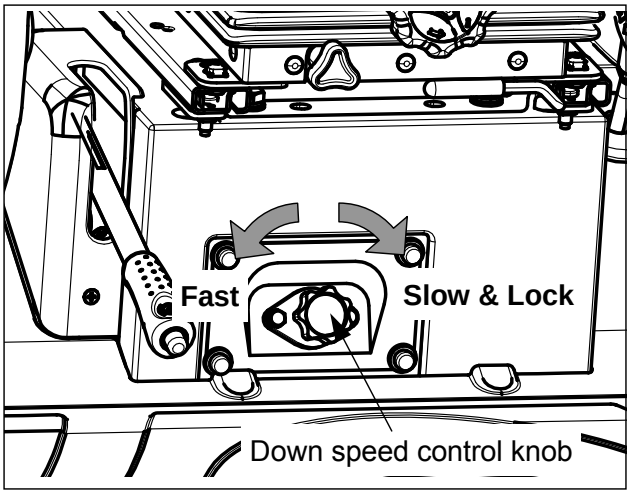


③ Mixed control

- If using above two levers in combination, mixed control is available. Set the position of the implement first, and set the draft control lever depending on the draft load. At this time, working depth can be controlled by draft control lever under position control.

④ Down speed control knob (MHL)

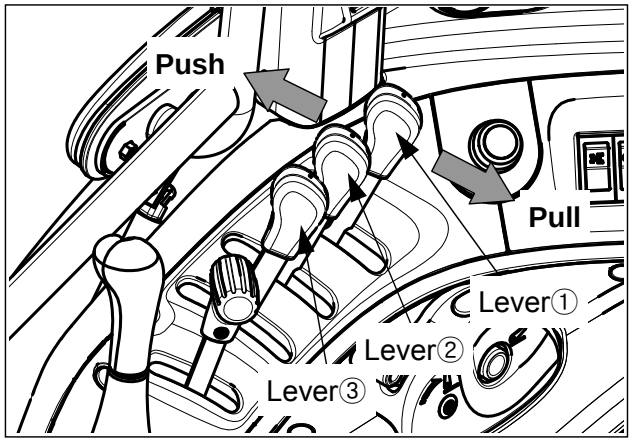
- Turn the knob to the clockwise to lower the implement slowly and to the counter-clockwise to rise speed faster. If turning clockwise fully, the implement is fixed and even If lowering down the position control lever, the implement does not let down.
- Tiller : Slow in down speed
- Plough : Fast in down speed
- When working in hard ground, slow down the down speed to avoid the bounding of the implements.

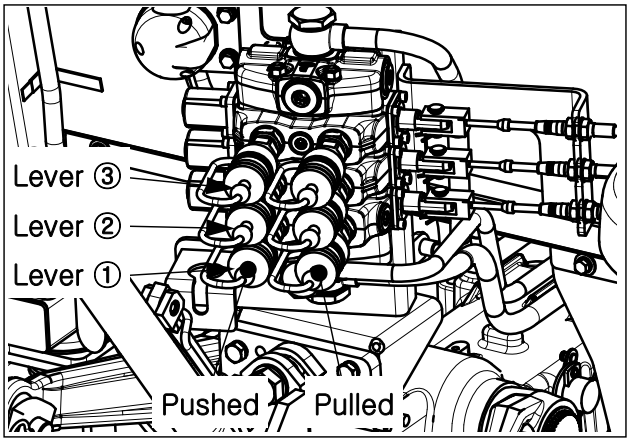


⚠ Warning	▶ When driving on the road, turn right the down speed control knob slightly to lock. ▶ When changing the blades of tiller or removing grass, stop the engine and turn the down speed control knob to right slightly to lock. (The knob will be rotated about two revolutions.)

(4) Remote control lever and Quick coupler (optional)

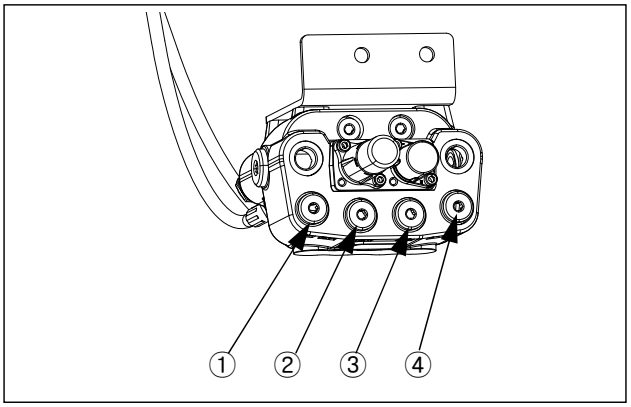
- These levers are used to operate the hydraulic cylinder and/or motor of the implement attached to the tractor.
- If you push the remote control lever forward, the hydraulic pressure works to the lower coupler, and the upper coupler shall be connected to the drain.
- Lever ①,② and ③ (optional) can be operated respectively, and when operating the levers at the same time, the one received less pressure begins to start first.
- After connecting, and preliminary operating the hydraulic equipment, check again transmission oil level of the tractor.



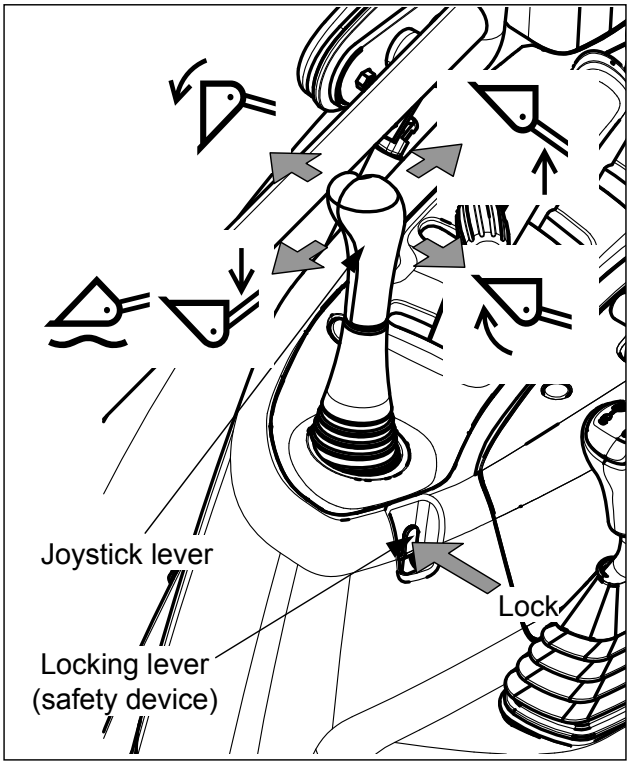


(5) Joystick lever (If fitted)

※ Remote joystick lever helps to operate front loader comfortably.



- When connecting hydraulic hoses, follow the instruction below.
  - ► loader down - port ①
  - ► loader up - port ②
  - ► bucket up - port ③
  - ► bucket dump - port ④
- The standard of hydraulic port is 'PS3/8'.
- Use the adapter or quick coupler for hydraulic connection.
- Joystick can be operated at 4 directions as shown in the right figure.
  If you move joystick diagonally, the loader and bucket shall be operated at the same time. Then, small loads move first.
  If you want to float bucket, lower the loader and push forward the lever at floating position.
  After finishing work, pull the lever and place it in 'Neutral' position.



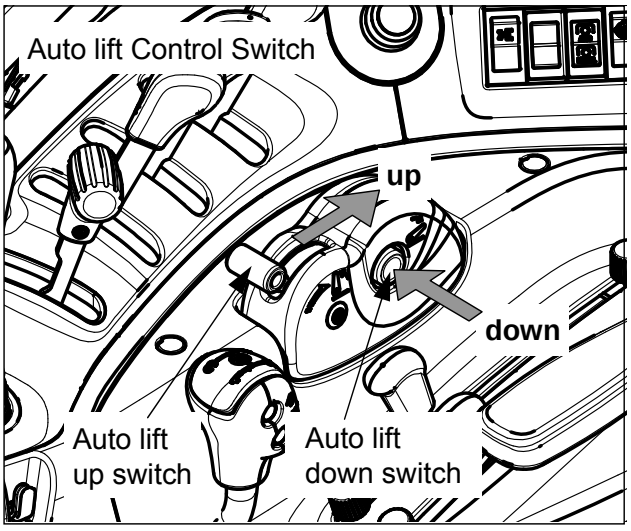
<Meaning of Symbols>

Loader up	Bucket floating
Loader down	Bucket up
	Bucket dump

- Locking lever shown in the right figure is used to lock the joystick lever.
  - Pull from the joystick : Unlock
  - Push to the joystick : Lock
- *For further information, See page 4-20 in this manual.*

Warning	▶ To prevent accidents, push and lock the locking lever when you do not use joystick lever.

(6) Auto lift control (MHL)



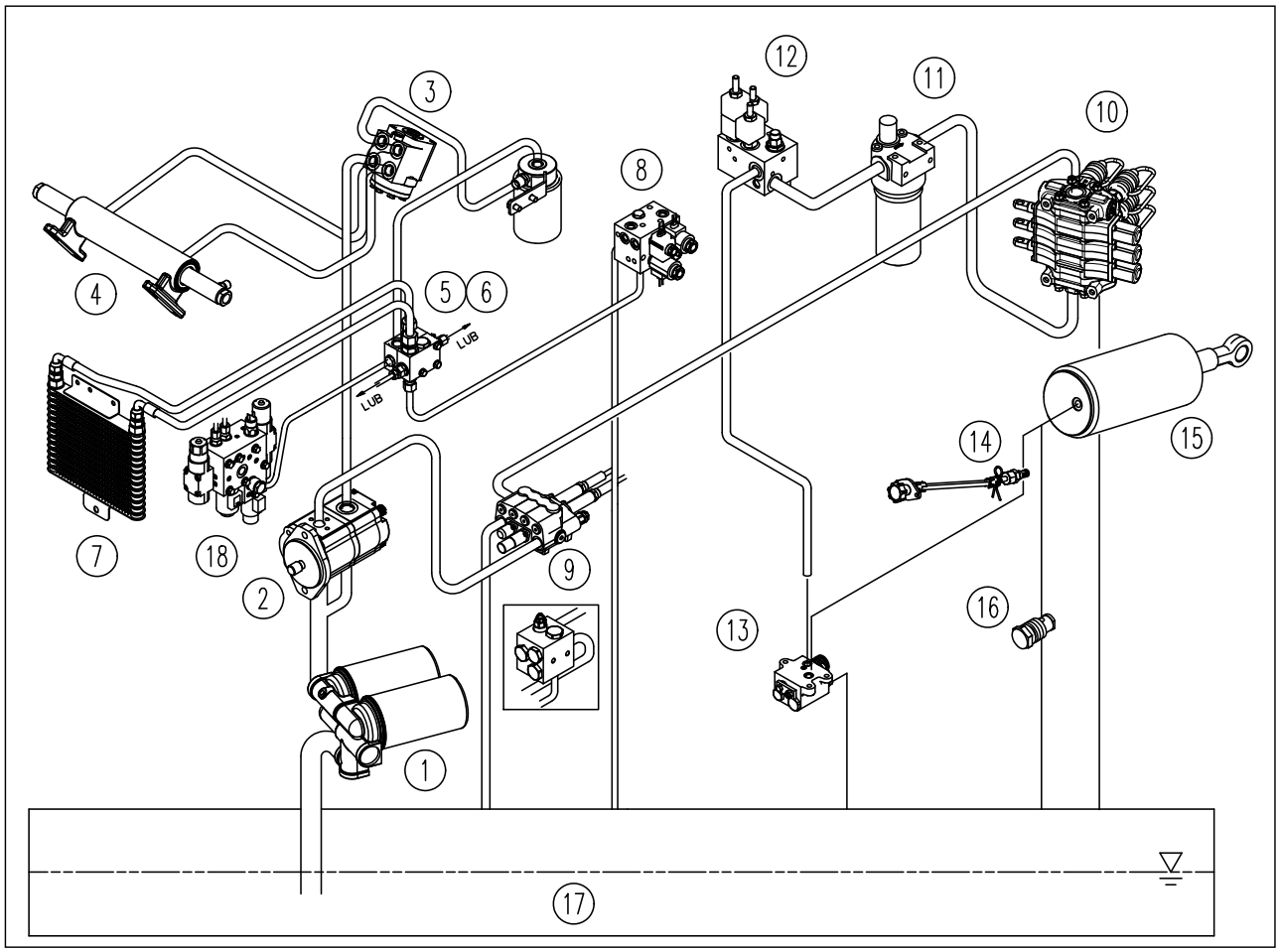
※ It is used to lift up the implement up to the highest position quickly and lower it down to the position set by position control lever without using position control lever.

- Pull the auto lift up switch backward to lift up the implement.
- Press the auto lift down switch to lower down the implement. At this time, the auto lift up switch returns forward automatically.
- When the auto lift up switch is pulled back, the implement does NOT moved by position control lever.
- When lifting up the auto lift up switch, the PTO shaft stops in case the PTO mode switch is “AUTO” (optional).

⚠Warning	▶ When driving on the road, lift up the implement by using the position control lever. And, lock the down speed control knob. ▶ When lifting up or down the implement by using auto lift control switches, do not approach the implement. And before using the switches, you have to check the safety conditions of the working area.

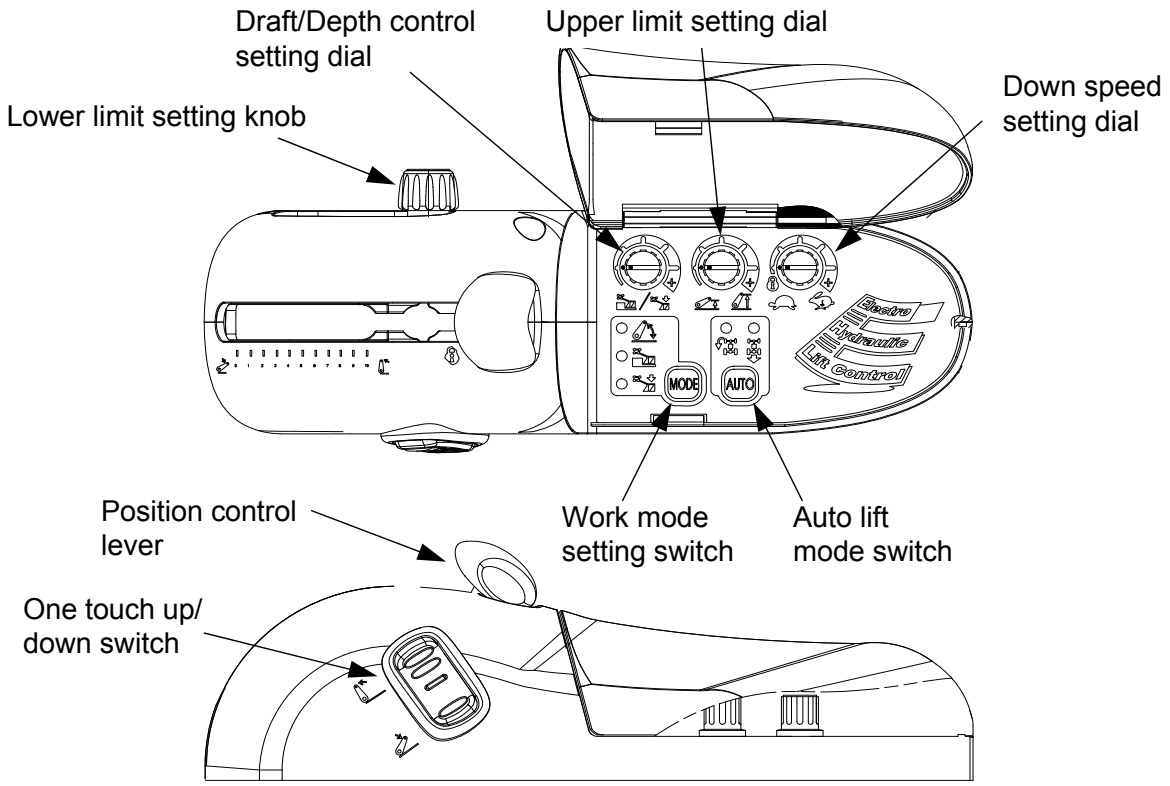
(7) Hydraulic System Diagram

1. Hydraulic oil filter
2. Hydraulic pump
3. Steering unit
4. Steering cylinder
5. Sequence valve
6. Oil cooler valve
7. Oil cooler
8. T/M control valve
9. Front loader valve
   (option : Front outlet valve)
10. Remote control valve
11. In-line filter (if fitted)
12. Leveling control valve
    (if fitted)
13. Hydraulic lift control valve
    (MHL)
14. Down speed control valve
    (MHL)
15. Hydraulic lift cylinder
16. Safety valve
17. Oil tank (Transmission case)
18. Power shuttle valve (if fitted)
19. Power shuttle filter (if fitted)



3-6. Electro-Hydraulic Lift (EHL) (if fitted)

(1) Configuration & Description of Controller



● Operation switch and dial description

Operation switch	Function
Position control lever	It is used to lift up/down the implement to the desired position
Lower limit setting knob	It is used to restrict the lower position of the position control lever.
One touch up/ down switch	It is used to lift up/down the implement without using position control lever.
Work mode setting switch	It is used to select the Position/Draft/Depth control mode of the implement.
Auto lift mode switch	It is used to select the function to lift the implement automatically when the tractor turns or moves backward.
Draft/Depth control setting dial	It is used to set the ratio of towing force or tillage depth when working in the Draft/Depth control mode.
Upper limit setting dial	It is used to restrict the highest position of the implement when using auto lift mode switch or one touch lift up/down switch.
Down speed setting dial	It is used to set the lowering speed of the implement.

(2) Operating Electro-Hydraulic Lift (EHL)

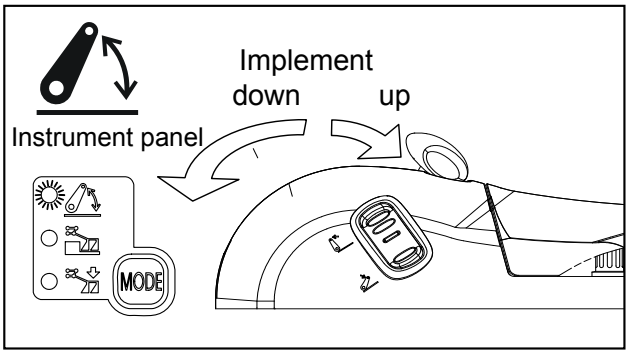
Instrument panel

- If the engine starts, and the position control lever does not synchronized to the 3-point linkage, the EHL display shows symbols in the right figure. In this case, you have to synchronize the position control lever to 3-point linkage to activate the Electro-Hydraulic Lift.
  ☞ How to synchronize the position control lever. You have two choices.
  ① Pull or push the position control lever to the corresponding position of the 3-point linkage. If synchronized, the beep sounds shortly.
  ② By using the one touch up/down switch, lift the implement up and down one time.
- If the position lever is synchronized, the EHL symbol shall disappear.
- When the engine starts, the work mode of EHL shall be set to the position control, and as you press the switch repeatedly, the mode can be changed as below, and the corresponding LED on the instrument panel shall be ON.

	Change order	Default value
Work mode	Position->Drafting->Depth control	Position control

① Position control

- EHL controller provides you more convenience to operate the position control lever by using a finger. Follow the instructions as below.



1. Check that EHL display in the instrument panel shows the symbol, same as right figure, and the position control LED is ON. If not, press the work mode setting switch repeatedly.
2. Push position control lever forward and the implement lets down by its own weight.
3. If the position control lever is on the random position, the implement stops at the height corresponding to the lever position.
3. To keep the height of implement in a desired range, restrict the lever to the lowest position with stopper by using the lower limit setting knob.
5. Even if the lower limit of the position control lever is set, if you pull the position control lever up and then push it forward, the implement lets down.

⚠Warning	▶ Before driving on the road, lift the position control lever up and pull it back to the "padlock" symbol position so that the implement can not let down. ▶ Before driving on the road, turn the down speed setting dial to the left fully to lock.

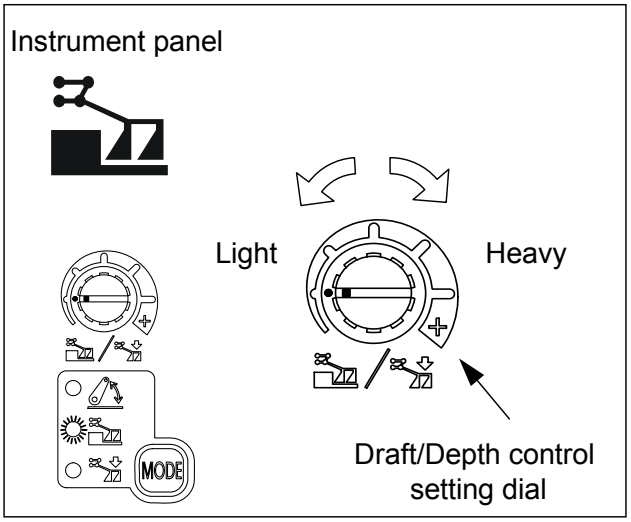
② Draft control

- This mode maintains the draft load from the implement consistently by detecting the load and transmitting it to the hydraulic valve to lift up or down the implement. Generally, this is useful for the implements such as plow.

  1. Press the work mode setting switch with checking that the draft control LED is ON.
  If the position control lever is synchronized to the 3-point linkage, the draft control starts with beep.

  2. The load that hydraulic valve receives shall be determined according to the setting of Draft/Depth control setting dial. That is, the more the dial turns left (“Light”), the more the implement rises up by a little draft load.

  3. If you need to lift the implement up, use the position control lever or one touch up/down switch.



③ Depth control

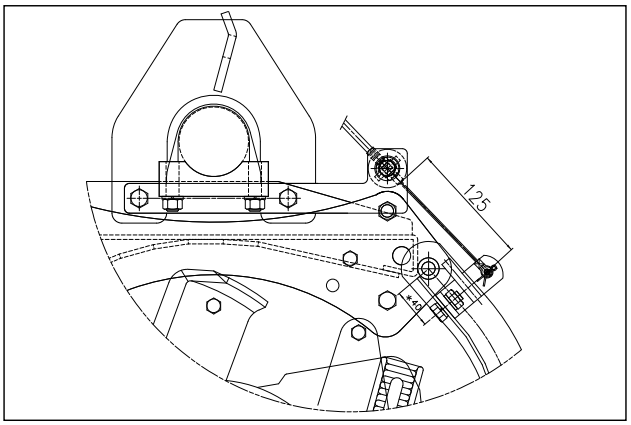
- This mode maintains the tillage depth consistently in the even working area such as crop fields by detecting movement of the tiller rear cover.

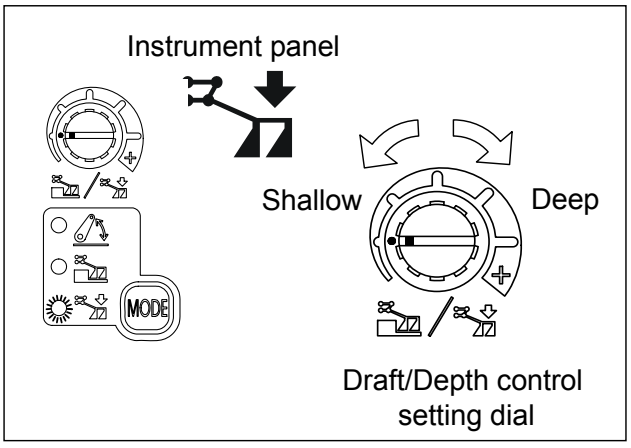
  1. As shown in the figure, bracket and cable must be installed on the tiller. After installing, check if cable stroke is 125mm. (4.92 in.)

  2. Press the work mode setting switch with checking the depth control LED is ON.
  If the position control lever is synchronized to the 3-point linkage, the depth control starts after 3 seconds.

  3. The tillage depth is determined according to the setting position of the Drafting/Depth control setting dial. The more setting dial position is ‘**Deep’,** the more the tiller maintains deep tillage depth.

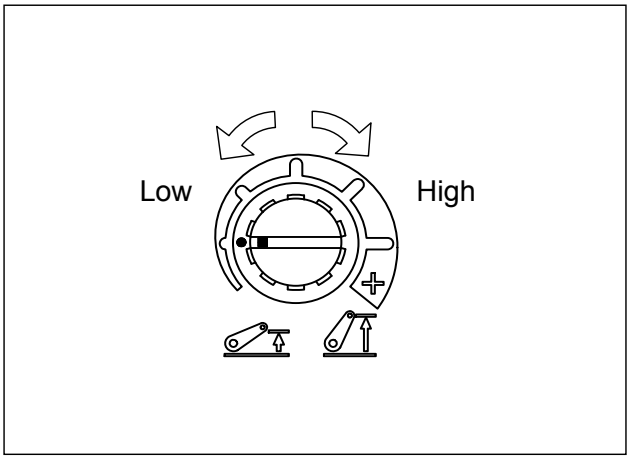
  4. When the engine receives excessive load continuously, turn the dial to the left gradually. To release the instantaneous excessive load, pull the position control lever backward a little and push it to the original position.





Notice	▶ If the draft control mode is set in the state that depth control cable is not attached, this mode is not available, and continuous beep sounds.

④ Upper limit setting dial



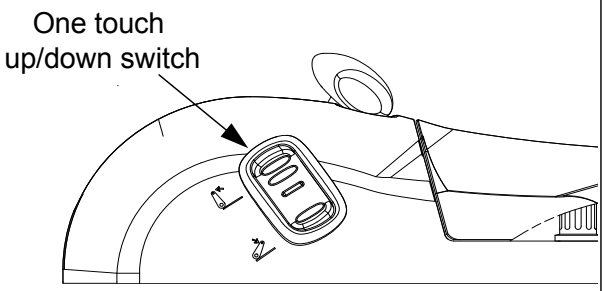
- This is used to set the upper limit of one touch lift and auto lift function.

1. Turn the upper limit setting dial to the desired position. According to the dial position, the height shall be set as below.

   Min. : 500mm (19.7 in.) between lower link end and ground
   Max. : maximum height of lift arm

2. When using the position control lever, this set is not available.

⑤ One touch up/down switch



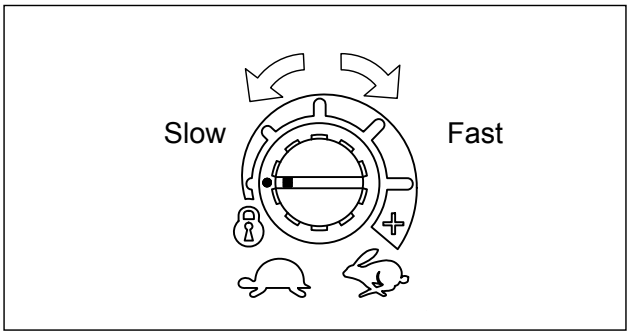
- This is used to lift the implement up/down easily at one time without operating position control lever.

  1. Press the upper side of one touch up/down switch to lift up the implement to the upper limit.

  2. Press the lower side of the switch to lower the implement to the position set by position control lever.

Notice	▶ If the position control lever is placed over the upper limit of lift arm, the one touch up/down function is not available.

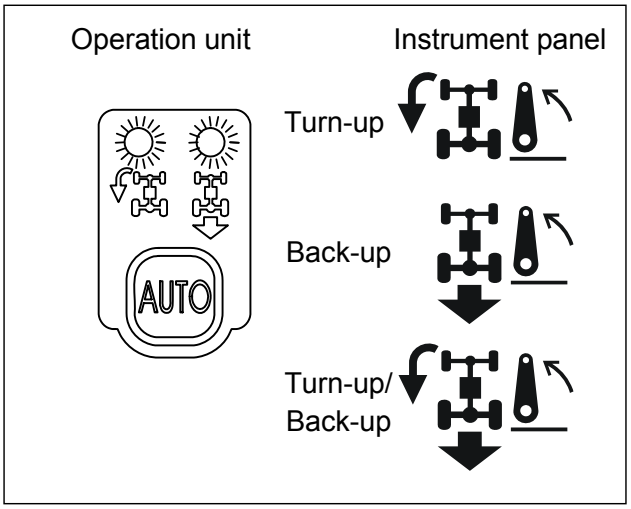
⑥ Down speed setting dial



- Turn the down speed setting dial to the left and the down speed is getting slow and if you turn it to the right, the down speed is getting fast.
- Turn the dial to counter-clockwise fully and the hydraulic lift shall be fixed downward and the implement will not let down even if you put the position control lever down.

Caution	▶ When driving on the road, turn the down speed setting dial to counter-clockwise slightly to lock. ▶ When changing the blades of tiller or removing grass, stop the engine and turn the down speed setting dial to counter-clockwise slightly to lock.

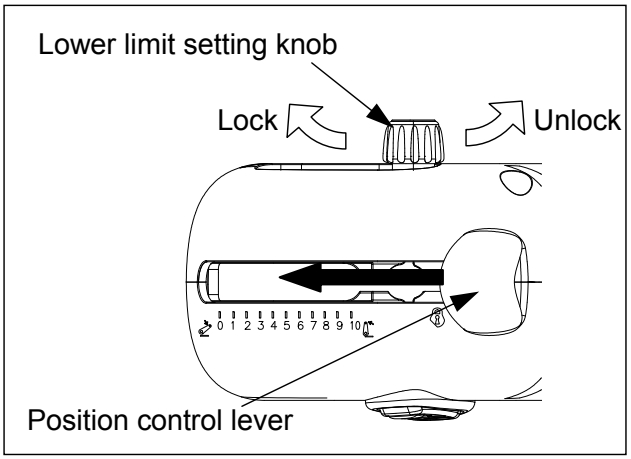
⑦ Auto lift mode switch



- This is used to select the auto lift mode.

1. When the engine starts at first, the auto lift mode is “OFF”. If you press the auto lift mode switch repeatedly, the mode shall be changed with the LED light as below.
   OFF -> Turn Up -> Back Up -> Turn up and Back Up.
2. Turn-up : If you turn the steering wheel more than half of maximum angle. The implement shall be lifted up automatically to the upper limit. If you turn the steering wheel to the neutral via the angle, and press the lower side of one-touch up/down switch, the implement will be lowered down to the original position.
3. Back-up : If you move the shuttle lever backward (Reverse). The implement shall be lifted up automatically to the upper limit. And if you move the shuttle lever forward or to neutral, and press the lower side of one-touch up/down switch, the implement will be lowered down to the original position.
4. Turn-up and Back-up : Turn-up and Back-up functions are available.

⑧ Lower limit setting knob



- This is used to set the lower limit of position control lever.

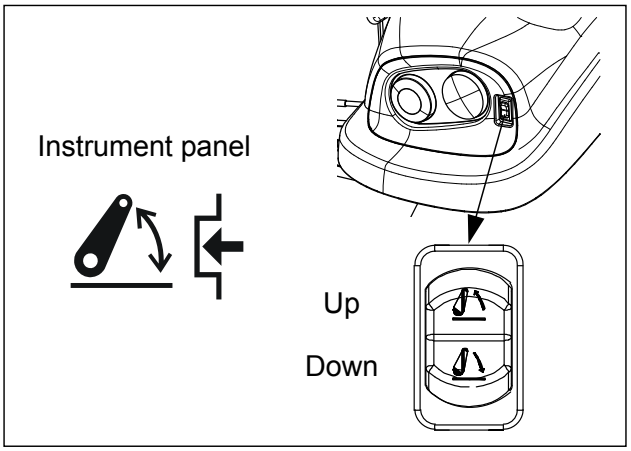
1. Turn the setting knob to the left to loosen the lock and set the position control lever to desired position and then turn the knob to the right to lock.
2. Even if the position control lever lower limit is set, If you lift up the position control lever and push it forward, the lever can be moved under the lower limit position.

⑨ External up/down switch

- This switch is attached on the rear mudguard.
- This is used to attach or detach the implement to the 3-point linkage.

  1. If you press and hold the switch up/down, the implement will lift up/down with beep sounds.

  2. If the implement is not attached, the 3-point linkage lets down very slowly due to oil viscosity resistance. In this case, press the lower link down.

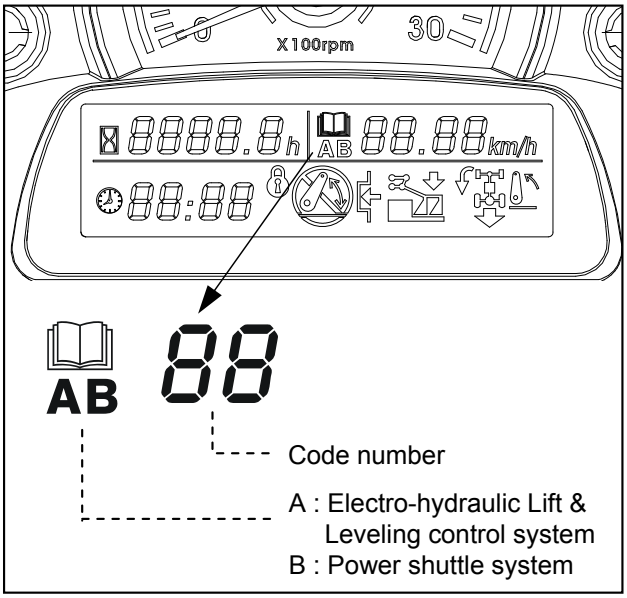


Notice	▶ According to the ambient temperature, the lift up/down speed of the implement can be changed.

Caution	▶ DO NOT operate the switch with standing between tractor and rear implement. The operator must only activate the external switch while standing to the side of the tractor. ▶ Never extend arms, any part of the body or any object into the area near the 3-point linkage while operating the external up/down switch.

(3) Error Diagnosis Code (EHL)

- If the EHL sensor or valve has failed, the error code shall be displayed on the Instrument panel as shown in the figure.
- In case of several errors, the errors shall be displayed repeatedly every 1 second. In this case, record all error codes.
- And, contact your authorized dealer for check and tell the error code.



A. Sensor

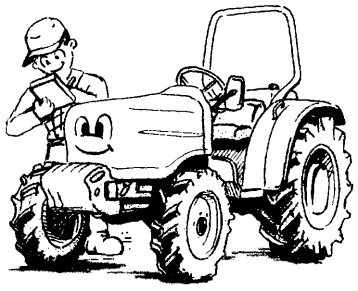
	Lift arm sensor	Draft sensor	Depth control sensor
Short	**A 01**	**A 02**	**A 03**
Open circuit	**A 11**	**A 12**	**A 13**

B. Valve

	Up valve	Down valve
Poor	**A06**	**A07**

4. Operation and Work

4-1. Engine start and stop



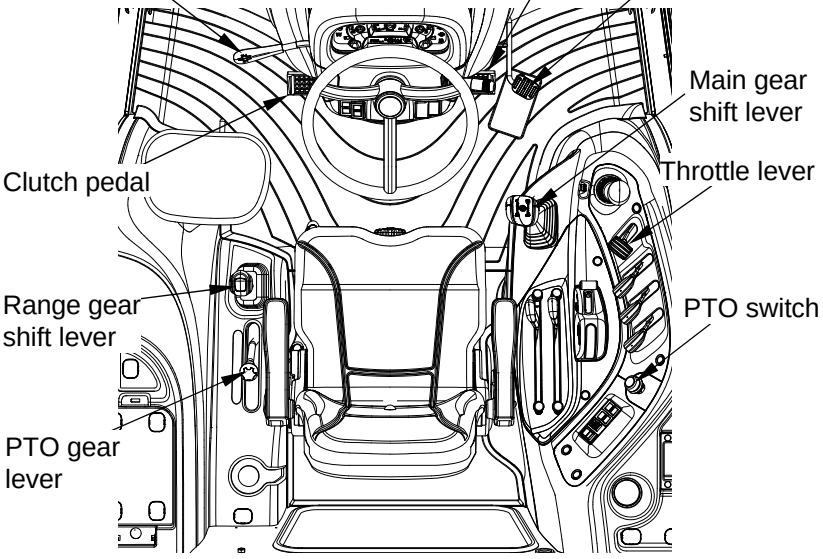
Caution	▶ Check each part before starting the engine. ▶ Check if there is some other people around before starting. ▶ Place all the levers and switches in NEUTRAL or OFF position.

(1) Engine start

1. Sit in the driver's seat and apply the parking brake lever.

2. Place the main gear shift lever, range gear shift lever, shuttle lever in NEUTRAL and PTO switch in OFF position.

3. Push the throttle lever to the middle position of full throttle.



4. Turn the key switch to "ON" and check if engine oil pressure indicator, battery charging indicator, cold start aid indicator is ON.

5. Wait until cold start aid indicator is OFF. (about 15 seconds)

6. Depress the clutch pedal fully and turn the key switch to "START" position. As soon as the engine starts, release the key switch to "ON" position.

7. Check if engine oil pressure indicator, battery charging indicator is OFF. If any these indicators is ON, stop the engine immediately and check.

8. Run engine a few minutes to allow engine oil and transmission oil to warm up.

Warning	▶Only start engine outdoors or in a well ventilated place, as the engine exhaust fumes may cause sickness or death. . ▶To avoid an explosion, never use starting fluid to start engine. ▶Start the engine ONLY from the driver's seat with depressing clutch pedal fully. ▶DO NOT start the engine by shorting across the terminals of start motor. If the engine starts, the tractor can move suddenly.

Caution	▶If clutch pedal does not depressed fully or PTO switch is not 'OFF', the engine does not start even if turning the key switch to "START" position. ▶DO NOT operate start motor more than 10 seconds. If engine does not start, wait for 1~2 minutes before restarting. ▶When the engine is running, DO NOT turn the key switch to "START" position. It may cause the failure of start motor. ▶In the cold weather, carry out the warming up. If you use the tractor in the state that the engine does not reach the normal temperature, the engine life shall be reduced. **Especially for the power shuttle version, sudden start without warming-up the engine can cause damage to the power shuttle clutch and reduce it's reliability. Have to warm up the engine until the blink of the Neutral indicator disappears on the instrument panel.**

(2) Start in cold weather

- Push the throttle lever to the middle position of full throttle.
- Start the engine after cold start aid indicator goes OFF. (If fitted)
- If engine runs rough, push the throttle pedal down 2~3 times for a while. (Mechanical type)
- If engine runs smoothly, carry out warming up for 5~10 minutes at 1500 rpm. **Especially for the power shuttle version, have to warm up the engine until the blink of the neutral indicator has disappeared on the instrument panel.**
- Use the engine oil for winter in cold weather. Refer to "Lubricants and Capacity" at the end of this manual.
- Use the diesel for winter when it is very cold weather. It is much easier to start engine.

Caution	▶When storing the tractor in the cold weather, the battery must be removed and stored in a cool and dry place where it is warm and is isolated from the children. ▶Allowing engine to idle for a long time will waste fuel and cause a build up of carbon.

(3) Engine stop

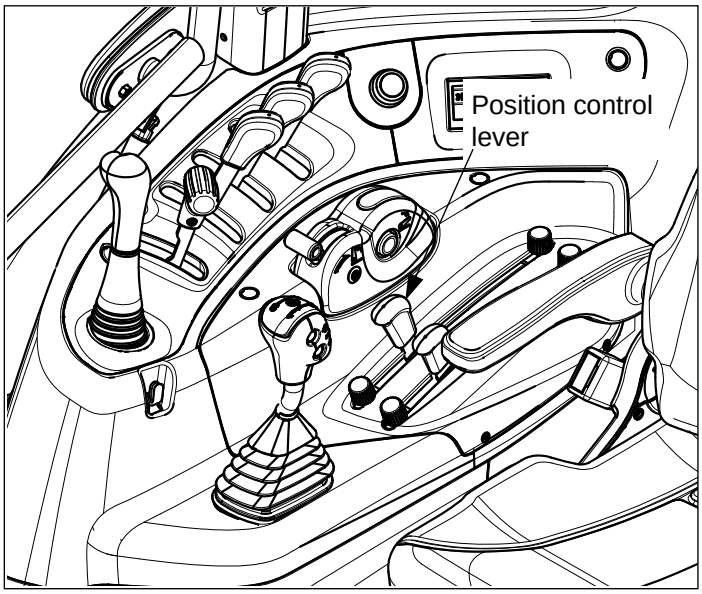
- Pull the throttle lever backward to reduce the engine speed and turn the key switch to “OFF” position. The engine shall be stopped.

⚠ Caution	▶ When stopping engine after heavy work, run the engine for 1~2 minutes at low speed. If you stop the engine suddenly, the engine life could be shortened.

4-2. How to drive and how to stop

(1) How to drive

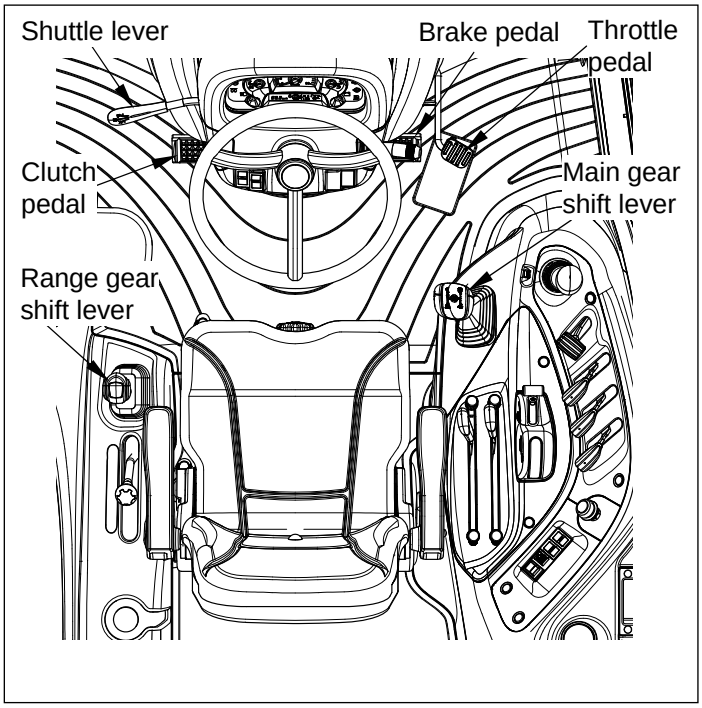
1. Pull the position control lever back to lift the implement up after starting engine.



2. Fix the engine rpm at 1500 RPM

3. Press the clutch pedal completely

4. Place each gear lever (Main, Range, Shuttle lever) on the desired position.



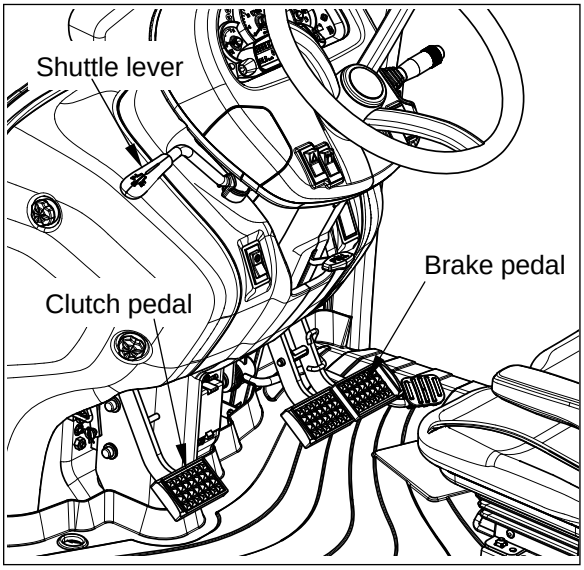
5. Press the brake pedal and release the parking brake lever.

6. Release the clutch pedal slowly and the tractor starts.

Notice	▶ Release the clutch pedal slowly. If you release the clutch pedal suddenly, the gear life shall be reduced and it may cause a sudden start.

(2) Changing speed

- Depress the clutch pedal fully and operate all the shift levers correctly.
- Before shifting range gear lever, F/R shuttle lever, 4WD lever, Creeper lever, HAVE TO STOP the tractor completely. *For further information about operation, See section 3 in this manual.*

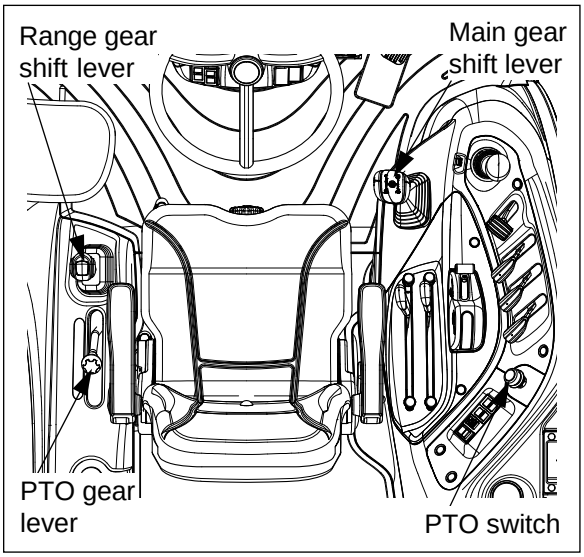


(3) Emergency stop

1. Press the clutch pedal and brake pedals at the same time to stop the tractor. Turn OFF the key switch.

2. DO NOT release clutch pedal until all moving parts have stopped.

3. Apply the parking brake.

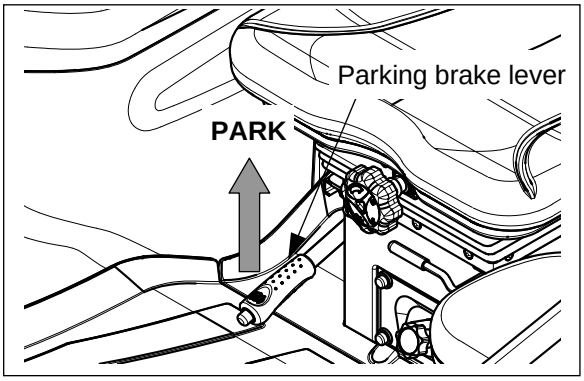


(4) Stopping tractor

1. Press the clutch and brake pedal. Place the shuttle lever, main gear shift lever in NEUTRAL and PTO switch to OFF and release the clutch pedal.

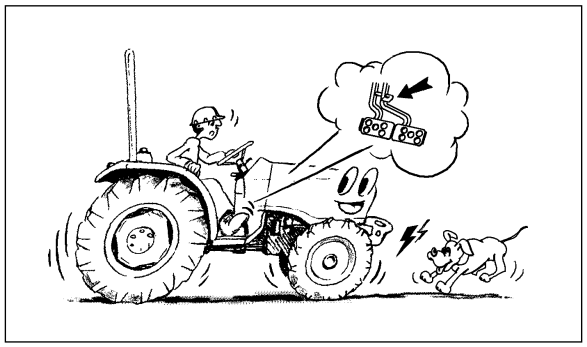
2. Push the position control lever forward to lower implements to the ground. Turn key switch to “OFF” position.

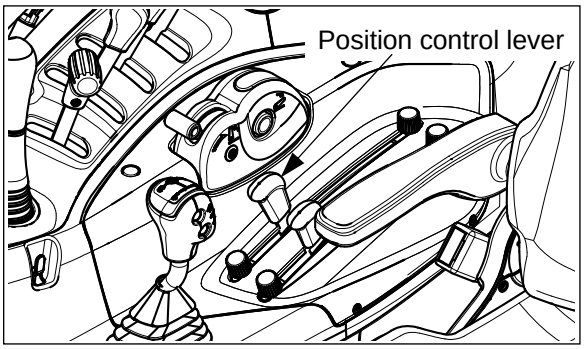
3. Pull the parking brake lever up and take foot off from the brake pedal.

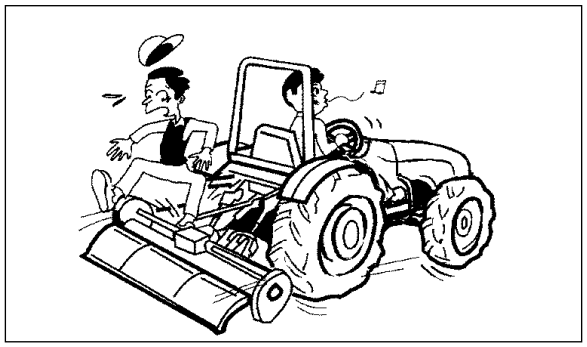


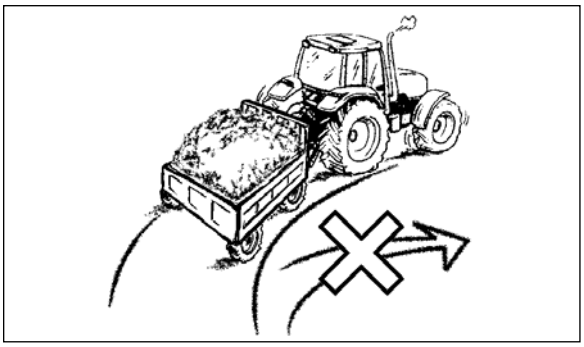
(5) Driving tractor on the road

- When facing downhill, DO NOT place the gear lever in NEUTRAL position.
- When driving the tractor on a unpaved road by attaching an implement to 3-point linkage, place the gear lever to low speed and DO NOT lift the implement up to the highest position. When the tractor bumps an obstacle, it may cause the jolting of implement and the failure of hydraulic system.
  (In this case, place the position control lever on ¾ rising position of full stroke for safety.)



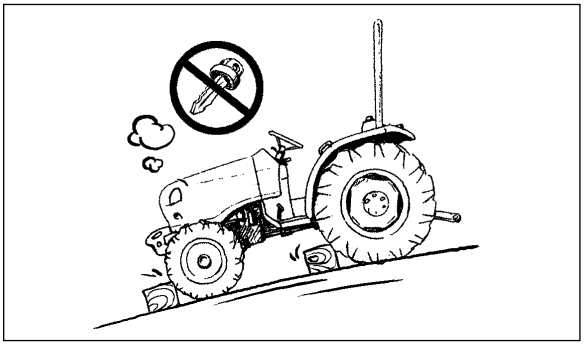






⚠Caution	▶ Connect the left/right brake pedal with brake pedal connecting pin before driving ▶ Avoid a sudden start, sudden brake and sudden turning. ▶ DO NOT allow people on the tractor or on other implements. ▶ DO NOT place the baggage on the tractor or implement. ▶ Place PTO gear lever in NEUTRAL position and put the PTO switch in OFF position. ▶ DO NOT use the differential lock and four wheel drive (2WD use only). ▶ When traveling with implement on rear 3-point linkage, tighten the stabilizer to avoid lateral movement. ▶ When traveling with implements installed, turn slowly by wide turning radius. ▶ While traveling, DO NOT ride your foot on the clutch pedal (if fitted) or brake pedal. ▶ While traveling, DO NOT operate any implement such as tiller, loader etc. ▶ **When traveling or starting the tractor on an uphill, select the range shift gear lever and main gear shift lever properly not to damage the engine and transmission drive line. If not, especially for the power shuttle version, it may cause damage to the power shuttle clutch by excessive abrasion.**

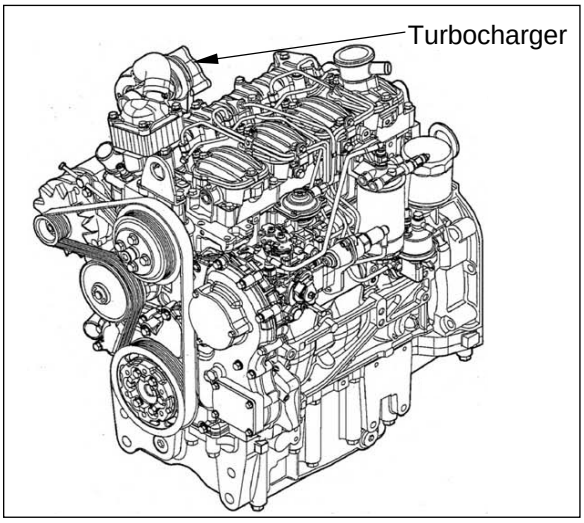
(6) Parking



- Stop the tractor on a level surface, not on a slope.
- Disengage PTO and place all the transmission shift lever in NEUTRAL position.
- Lower the mounted implements on the ground.
- Apply the parking brake.
- Stop engine and remove ignition key.
- Before you leave the operator's station, wait for engine and all moving parts to stop.
- Have to apply the wheel chock when parking the tractor on a slope unavoidably.
- **In case of the power shuttle version, to engage the low gear after the engine is stopped is NOT useful for engine brake. When parking the tractor on a hill, have to apply the parking brake and wheel chocks to the wheel.**

⚠Caution	▶If it is necessary to park the tractor on a slope, furthermore with loaded trailer, the tractor may roll down, even though the parking brake is applied. In this case, apply the gear in low speed and apply the chocks or blocks to all the tire. - Mechanical : downward slope ⇒ reverse 1 gear / upward slope ⇒ forward 1 gear. - Power shuttle : Appling low speed gear is NOT effective.

(7) Handling Turbocharger (if fitted)



- Before accelerating or starting the tractor fitted with the turbocharger, allow the engine to idle at 1000 rpm for about 30 seconds to ensure that the turbocharger is correctly lubricated.
- Before stopping engine fitted with the turbocharger, allow the engine to idle at 1000 rpm for at least 5 minutes. This allows the turbocharger and manifold to cool, preventing deformation of the components.
- After stopping engine fitted with the turbocharger, cover the exhaust tail pipe to prevent the turbocharger rotating in the wind, resulting in possible damage to the bearings. The turbocharger turbine must be prevented from rotating freely with the engine off, as the shaft bearings will not be lubricated.

4-3. How to handle new tractor

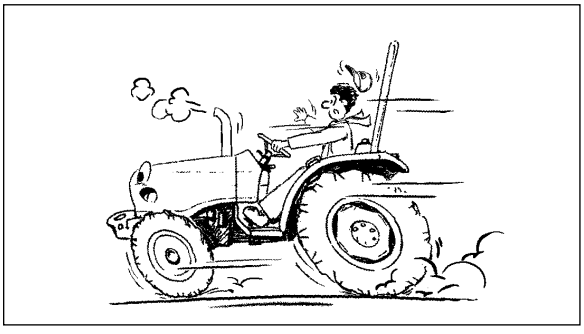
(1) Check points

※ For new tractor, the followings must be checked once again even though there was sufficient quality management, inspection, regulating of each part in the factory.

- Appearance check
  - Is there any damage while transporting?
- Engine cooling system check
  - Is there anti-freeze solution in the radiator? And any leakage?
- Fuel system check
  - Is there any leakage of fuel in the fuel system?
- Oil level check
  - Is there optimal oil amount in each part ?
- Electric system check
  - Is there any cut-off or any other problem in the wiring?
  - Is there any problem to operate the instruments?
  - Is the state of battery charging sufficient?

(2) Notices in handling new tractor

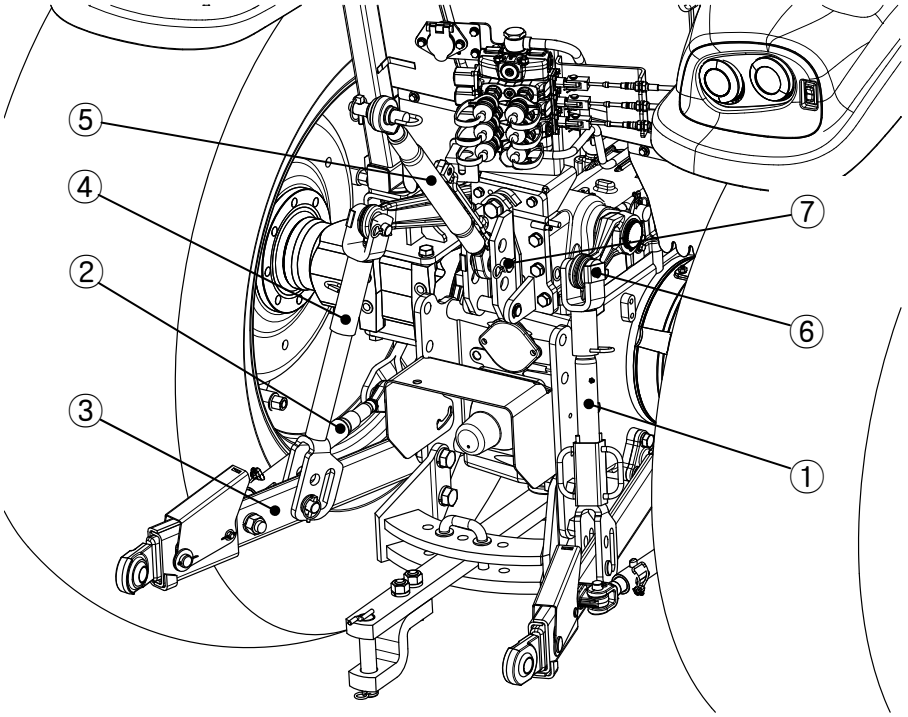
- To get the best performance, comply with the following instructions.
  - DO NOT start or stop the tractor suddenly.
  - DO NOT carry out heavy loaded work and DO NOT increase the engine rpm to high speed suddenly.
  - Despite warm temperature outside, carry out warming up the engine for approximately 5 minutes at 1500 rev/min



- After using first 50 hours,
  - Replace the engine oil filter and hydraulic oil filters after first 50 hours of work, and check each part of your tractor as reference of chapter 5. “Lubrication and Maintenance” (*See page 5-1*.)
  - If possible, contact your authorized dealer for “First 50 hour check”.

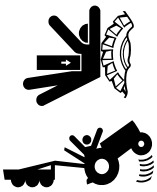
4-4. Attaching equipment

(1) 3-point linkage



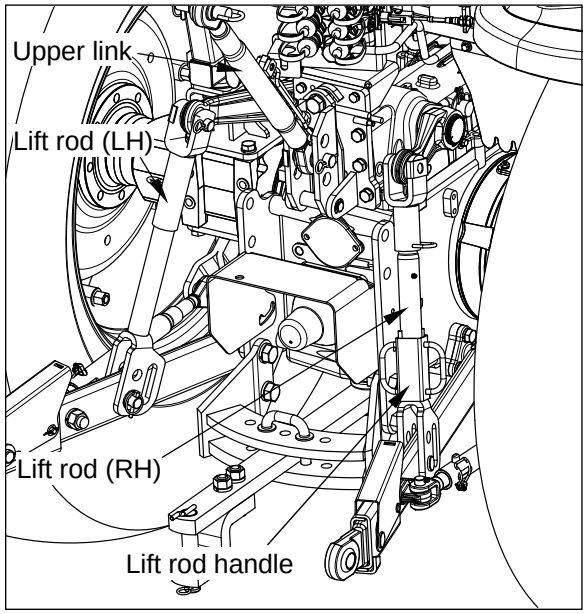
1. Lift rod (RH)
2. Stabilizer
3. Lower link
4. Lift rod (LH)
5. Upper link
6. Lift rod pin
7. Upper link pin

- When attaching the implement, comply with the followings.
  1. Set the implement upright on a level surface and approach the implement in reverse.
  2. Stop the tractor on attaching position and apply the parking brake.
  3. Connect the lower link(3) to implement and insert firmly the lock pin. (left, right)
  4. Connect the upper link(5) to implement and insert firmly the lock pin. Wide adjustable range of the upper link provides you easier attachment.
  5. Fix the implement firmly with stabilizer(2).(left, right).

⚠ Warning	▶ Before attaching/detaching implement, place PTO switch in OFF position and PTO gear lever in neutral position, and apply the parking brake.
	▶ When attaching/detaching implement, make sure to assemble and tighten the connecting parts correctly. ▶ if the tractor is used to tow heavy loads, always use the approved drawbar or hitch to avoid injury. Never connect to lower link or upper link of 3-point linkage. If not, it may cause tipping or turnover. ▶ DO NOT connect the implements that require more power than can be generated by your tractor. ▶ Never stand between implement and tractor when connecting implement. ▶ DO NOT change the setting pressure of the relief valve arbitrarily to increase the lift capacity of the 3-point linkage. It can cause fatal damage to the hydraulic system.

① Adjustment of Lift rod and Upper link

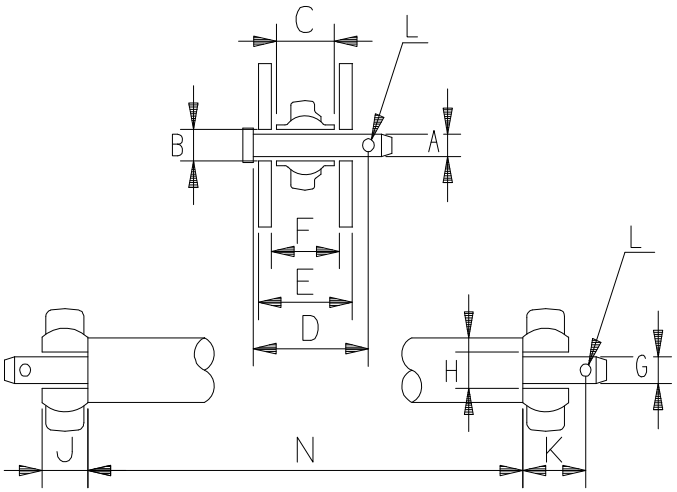
- Do not adjust the lift rod and upper link over the described range as below.
- For lift rod (RH)
  - Lift up the lift rod handle and turn left or right to adjust the length.
  - Lock the lift rod handle to the lower part after adjusting.
- For upper link
  - Lift up the lock spring to release the handle and turn the upper link by using the handle.
  - Apply the lock spring after adjusting.



	Classification	Lift rod	Upper link
Adjustment range	left	495~635 mm (19.5 ~ 25.0 in.)	550 ~ 855 mm (21.7 ~ 33.7 in.)
	right	495~635 mm (19.5 ~ 25.0 in.)	

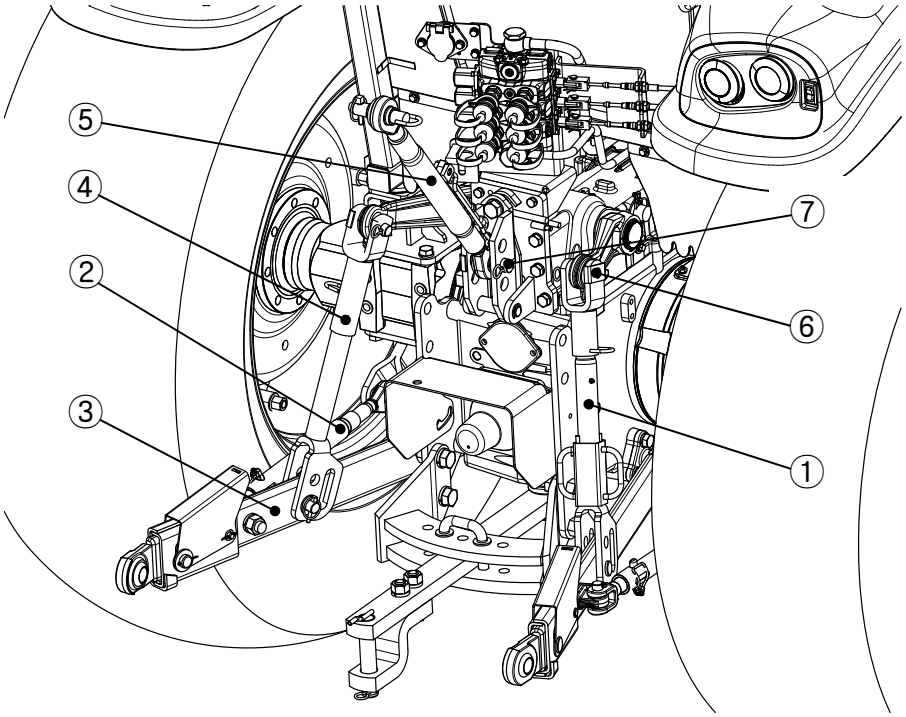
② Reference of Implement installation part

	A	B	C (max)	D (min)	E (max)	F (min)	G	H	J	K	L	N
CAT.2	25.4 (1.00)	25.7 (1.01)	51 (2.00)	93 (3.66)	86 (3.38)	52 (2.04)	28 (1.10)	28.7 (1.12)	45 (1.77)	49 (1.92)	12 (0.47)	825 (32.4)



unit : mm
(unit : inch)

③ Handling of the 3-point linkage



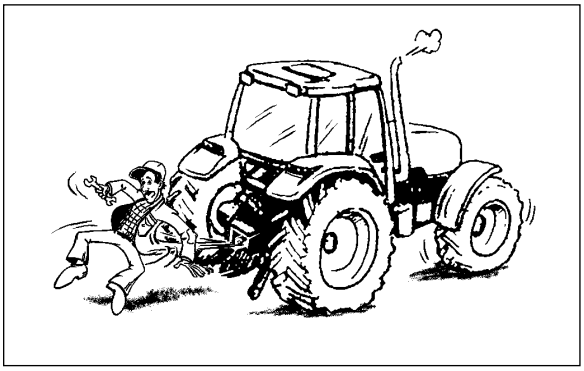
1. Lift rod (RH)
2. Stabilizer
3. Lower link
4. Lift rod (LH)
5. Upper link
6. Lift rod pin
7. Upper link pin

- When driving without attaching implement, comply with the followings.
  1. Fix upper link(5) with the fixing hook.
  2. Connect stabilizer(2) to the lower link(3) to avoid the lateral movement of the lower link.
- If 3-point linkage is not necessary, raise 3-point linkage to maximum height and fix it by turning the down speed control knob, or remove it as follow.
  1. Remove upper link pin(7) and upper link(5).
  2. Detach rear side of the stabilizer(2) from the lower link(3) while holding lower link tightly not to fall down.
  3. Remove lift rod (LH), lift rod (RH) and stabilizer(2) step by step.
  4. Remove lower link(3) carefully not to get hurt due to its weight.

(2) Power take-off (PTO) shaft and Connection

① Safety precautions

- When PTO shaft is rotating, NEVER APPROACH the shaft.
- Check if PTO shield is attached correctly. If the shield is removed or damaged, replace it with a new one.
- **Suitable Clothes & Protect Entanglement :**
  When checking or attaching implement to the PTO shaft, wear tight fitting clothes and safety equipment instead of loose or long clothes. Also, slippers, high heel shoes are not suitable. Wear the suitable clothes.

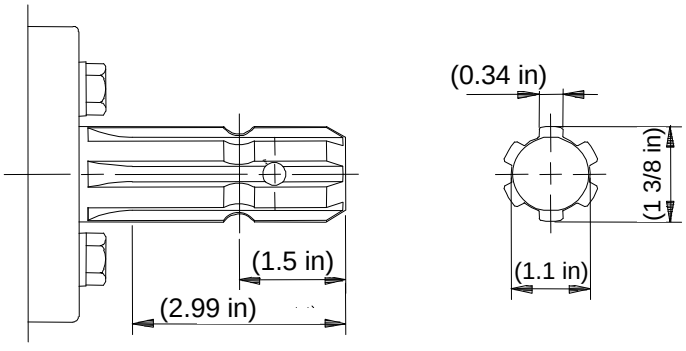


Warning	▶ Do not approach the rotating shaft such as PTO shaft or cooling fan, especially, with loose clothing and long clothes. The entanglement in rotating shaft can cause serious injury or death. ▶ Stop the engine and be sure PTO shaft is stopped before getting near it.

- Refer to the followings about PTO shaft dimension.

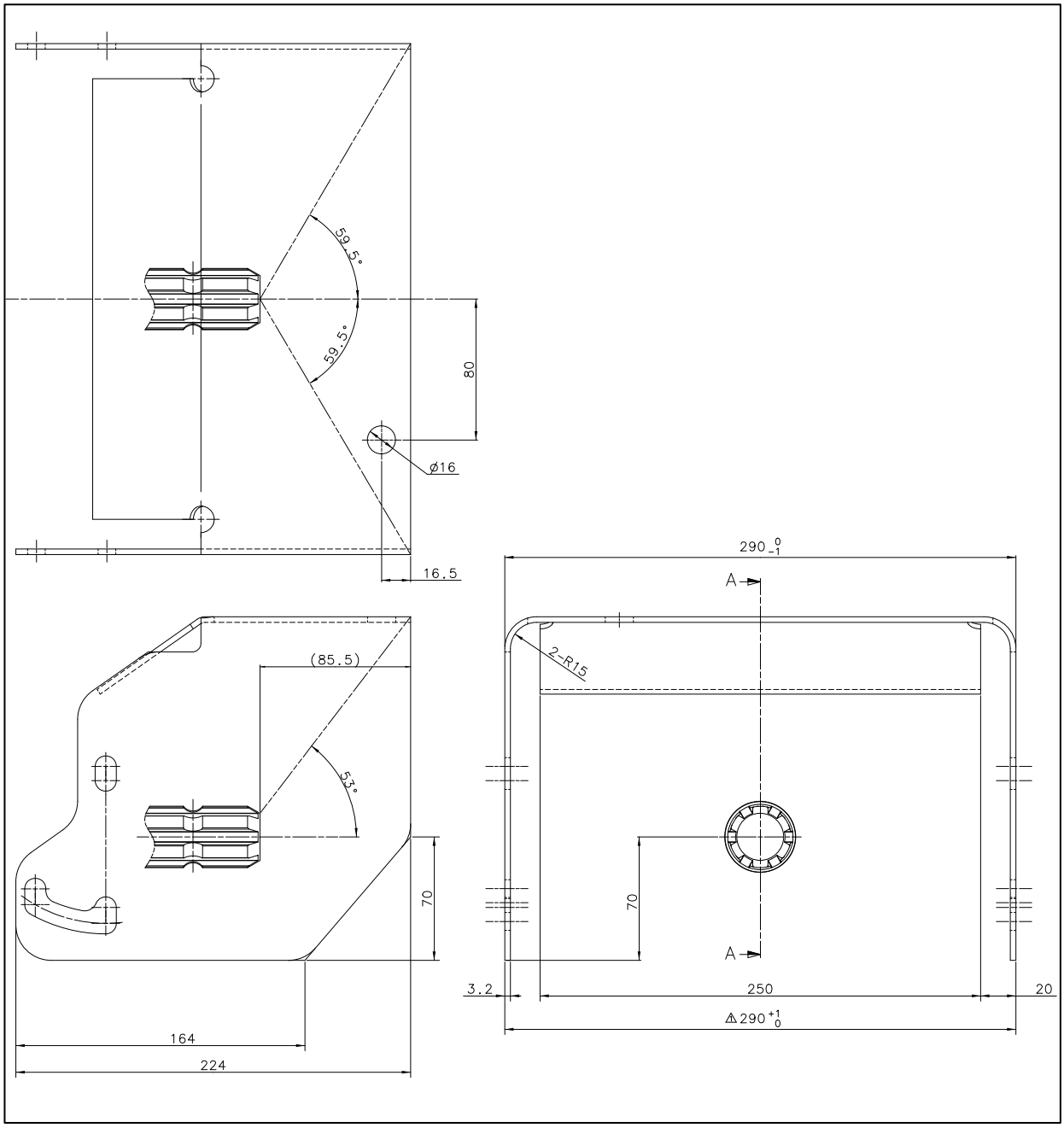
(All models)

PTO gear(s)	1	2	3
PTO / Engine speed	540 / 1958 rev/min	750 / 2132 rev/min	1000 / 2125 rev/min

Revolution direction	Clockwise (When looking at PTO shaft end)
Ground clearance	Height from ground to PTO shaft = Tire radius – 21mm (0.83 in.)
Shaft dimension (unit : inch)	

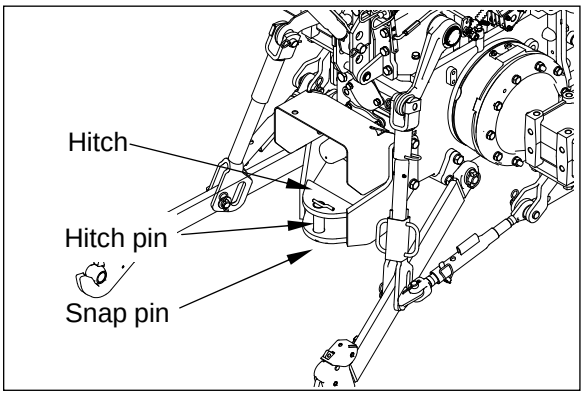
② Attaching PTO drive shaft

- When connecting PTO drive shaft to the PTO shaft and implement, make sure to check the fixing status of the locking pins.
- When attaching implements with power take-off drive shafts, refer to the drawings as below.
- After installing implements,
  - check the inclination of the PTO drive shaft,
  - check the interference with PTO safety cover and other structure,
  - check the effective engaging length of the PTO drive shaft according to the position of the 3-point linkage.
- The stiff inclination of the drive shaft make a loud noise and may cause a failure of the driveline.



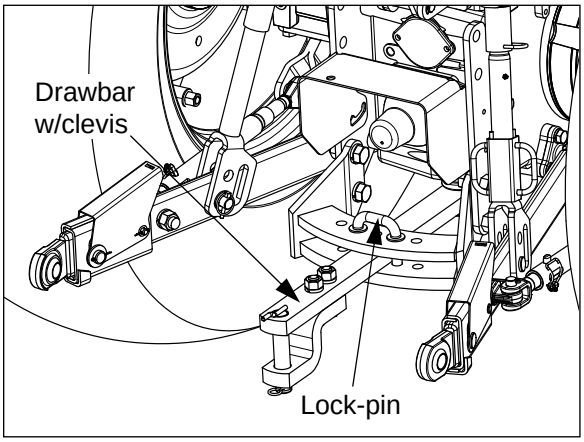
(3) Hitch and Drawbar (optional)

- When attaching towing equipments, use the hitch or drawbar. DO NOT use the 3-point linkage or other parts. If so, the tractor could turnover.
- Insert the hitch pin and snap pin correctly after attaching/detaching equipment.
- DO NOT exceed the maximum permissible vertical and horizontal load as below.



① Hitch

- Vertical load : 1500kg (3307lb)
- Horizontal load : 6000kg (13228lb)



② Drawbar w/clevis

- It is used to tow the equipments having 2 axles.
- It is available to adjust the position of the draw bar after removing lock-pin in the right figure. After adjusting, assemble the pins firmly.
- Vertical load : 650kg (1433lb)
- Horizontal load : 6000kg (13228lb)

- Technically permissible towable mass(es) are as below according to type of coupling.

	Hitch	Drawbar w/clevis
Unbraked towable mass	3000kg (6614 lb)	3000kg (6614 lb)
Independently braked towable mass	6000kg (13228 lb)	6000kg (13228 lb)
Inertia-braked towable mass	6000kg (13228 lb)	6000kg (13228 lb)
Hydraulic or pneumatic braked towable mass	N/A	N/A

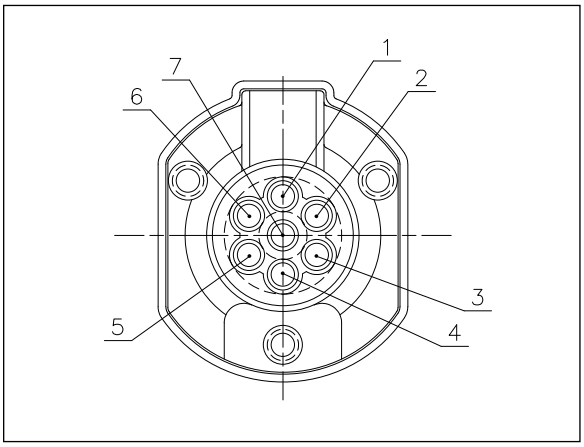
⚠Caution	▶ Pulling from the tractor rear axle or any point above the axle may cause the tractor to overturn. Use always the drawbar or hitch for pulling work. ▶ Do not tow equipment without brakes, weighing more than twice the tractor weight. ▶ When locking the hitch or drawbar with pin after aligning to the towing equipment, apply the parking brake and stop the engine. ▶ Before transporting equipment on public roads, make sure you comply with your local traffic regulation.

(4) 7-Pole connector (optional)

- The one of the standard 7-pole trailer connectors is provided and is mounted at the rear of the tractor. The connections of the 7-pole connector (viewed from the rear of the tractor) are as follows;

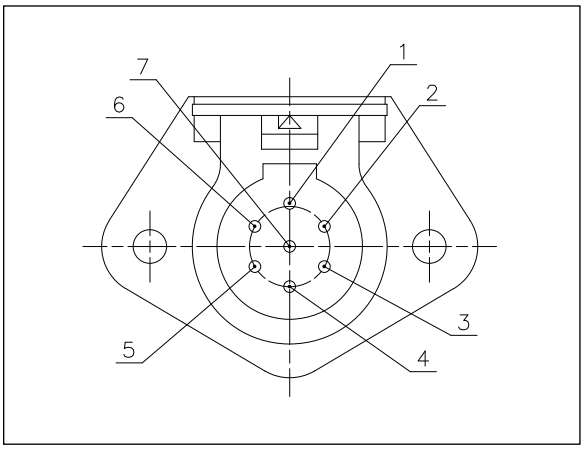
● EC Version

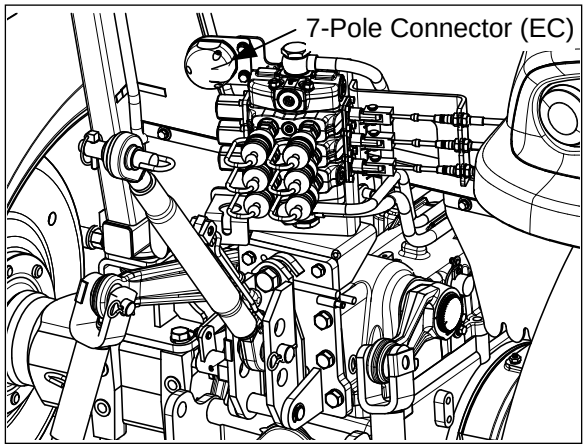
Pin No.	Function
1	Left turn signal light
2	NA
3	Ground (Earth)
4	Right turn signal light
5	Side light
6	Brake light
7	Side light

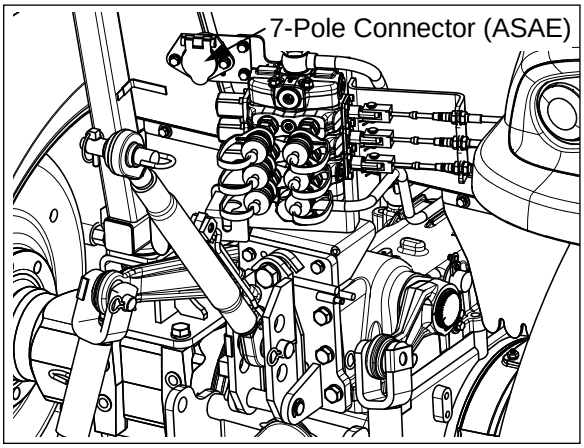


● ASAE Version

Pin No.	Function
1	Ground (Earth)
2	Working light
3	Left turn signal light
4	Brake light
5	Right turn signal light
6	License number plate light
7	Auxiliary







(5) Technically maximum permissible mass

- When working with front loader or rear heavy loaded attachments installed to the 3-point linkage, install ballast weights on the counter-part axle to maintain the front and rear weight balance of the tractor. If not, front or rear axle can be strained by the overloaded weight.
- When working with the front loader, place the attached rear weight to the highest position and turn the down speed control knob to the “lock” position.
- **DO NOT exceed the total maximum permissible mass and/or permissible maximum mass on each axle** declared by manufacturer as below, **even if the load capacity of the tire is sufficient**.
- **If the load capacity of the tires is lower than maximum permissible mass on each axle,** the maximum mass on each axle must be loaded **under the load capacity of the tire.**
  Check the load capacity of the tires.

	All models	Remarks
Technically total maximum permissible mass	6000kg (13228 lb)	It may depend on the load capacity of the tires. (See next page)
Front axle (*)	2500kg (5512 lb)	
Rear axle	4200kg (9259 lb)	

* includes front mounted equipment or loader in the raised position but without load in the bucket.

- **Restrict operation** : In case of driving speed does not exceed 8km/h (5 mph) and standard front/rear wheel track (*See page 7-1*), Intermittent maximum permissible load of the front axle can be ;
  4200kg (9259 lb) for all models ; Have to check the load capacity of the tires. (See next page).

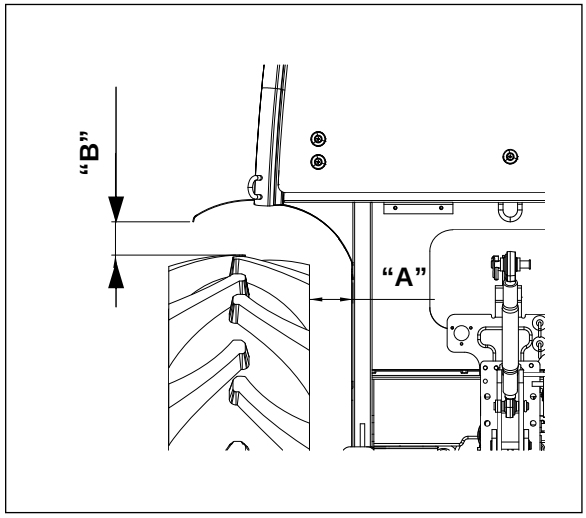
⚠Caution	▶ Maximum permissible mass is measured with only the front or rear wheels on the scales inclusive of ballasts and with mounted equipments in the raised position. ▶ **Do not exceed the maximum permissible mass above and/or the load capacity of the tires.** Overloaded operation may invalidate the warranty. ▶ DO NOT change the setting pressure of the relief valve arbitrarily to increase the lift capacity of the front loader or 3-point linkage. It can cause fatal damage to the hydraulic system and front axle.

(6) Tires and Load capacity

Axle No. (*)	Tires	Standard tire air pressure (kg/cm2)	Load capacity (x2) (kg)	Maximum mass(es) (kg)
1	11.2-24 8PR	2.4 (235 KPa, 34 psi)	2470 (5445 lb)	6000kg (13228 lb)
2	16.9-30 8PR	1.6 (160 KPa, 23 psi)	4490 (9800 lb)	
1	12.4-24 6PR	1.6 (160 KPa, 23 psi)	2400 (5291 lb)	6000kg (13228 lb)
2	18.4-30 8PR	1.4 (137 KPa, 20 psi)	5020 (11067 lb)	
Optional Tire				
1	9.5-24 6PR	2.1 (210 Kpa, 30 psi)	1590 (3505 lb)	5500kg (12125 lb)
2	14.9-30 8PR	1.8 (177 KPa, 26 psi)	3960 (8730 lb)	
1	280/85 R24	1.6 (160 KPa, 23 psi)	2430 (5357 lb)	6000kg (13228 lb)
2	420/85 R30	1.6 (160 KPa, 23 psi)	4660 (10274 lb)	
1	320/70 R24	1.6 (160 KPa, 23 psi)	2500 (5512 lb)	6000kg (13228 lb)
2	480/70 R30	1.6 (160 KPa, 23 psi)	5150 (11354 lb)	
1	320/85 R24	1.6 (160 KPa, 23 psi)	3000 (6614 lb)	6000kg (13228 lb)
2	460/85 R30	1.6 (160 KPa, 23 psi)	5400 (11905 lb)	
1	12.4-24 8PR	2.2 (220 KPa, 32 psi)	2568 (5661 lb)	6000kg (13228 lb)
2	420/85 R34	1.6 (160 KPa, 23 psi)	6168 (13598 lb)	
1	11.2-24 8PR	2.4 (235 KPa, 34 psi)	2304 (5079 lb)	5800kg (12787 lb)
2	13.6-36 8PR	2.0 (200 KPa, 29 psi)	3502 (7721 lb)	
1	280/85 R20	1.6 (160 KPa, 23 psi)	2240 (4938 lb)	5700kg (12566 lb)
2	380/70 R28	1.6 (160 KPa, 23 psi)	3502 (7721 lb)	
1	9.5R24	1.6 (160 KPa, 23 psi)	1696 (3739 lb)	5800kg (12787 lb)
2	380/85 R30	1.6 (160 KPa, 23 psi)	4354 (9599 lb)	

(*) 1 : Front axle, 2 : Rear axle

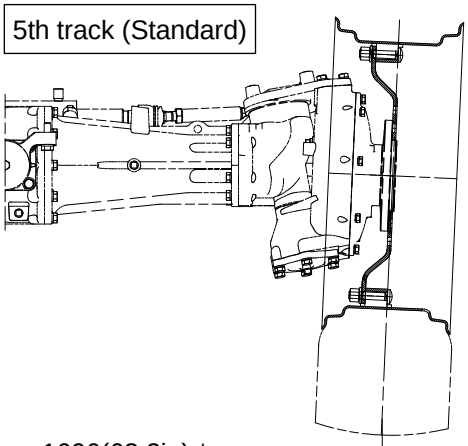
(7) Adjusting Wheel tracks and tire replacement



- If the front wheel track is adjusted, check the clearance between tires and tractor body case by case. If necessary, the steering angle must be adjusted.
  (See page 4-22 in this manual.)
- When adjusting rear wheel track, check the radial and lateral clearance between rear tire and tractor chassis as below.
  - A : 60mm (2.4 in) (Minimum)
  - B : 50mm (2.0 in) (Minimum)
- Depending on rim or disk type, the front and rear wheel tracks may vary.

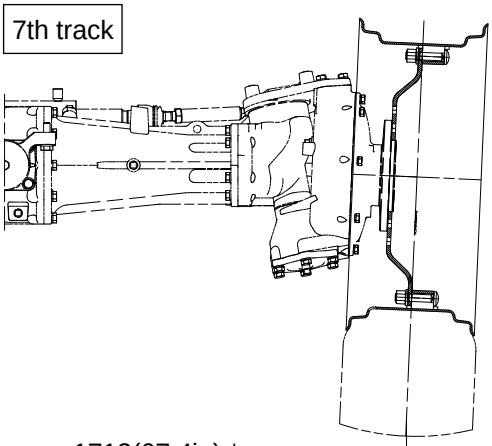
- **FRONT WHEEL TRACK (Tire & Wheel assembly : * : 11.2-24 / ** : 12.4-24)** Unit : mm (inch)

5th track (Standard)



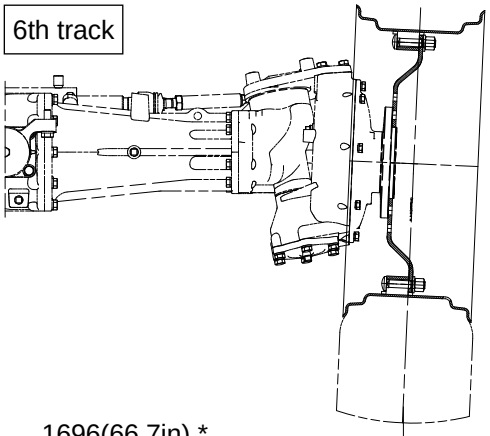
1606(63.2in) *
1602(63.0in) **

7th track



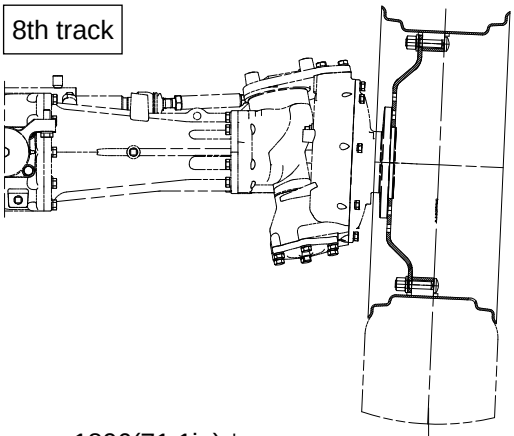
1712(67.4in) *
1708(67.2in) **

6th track



1696(66.7in) *
1692(66.6in) **

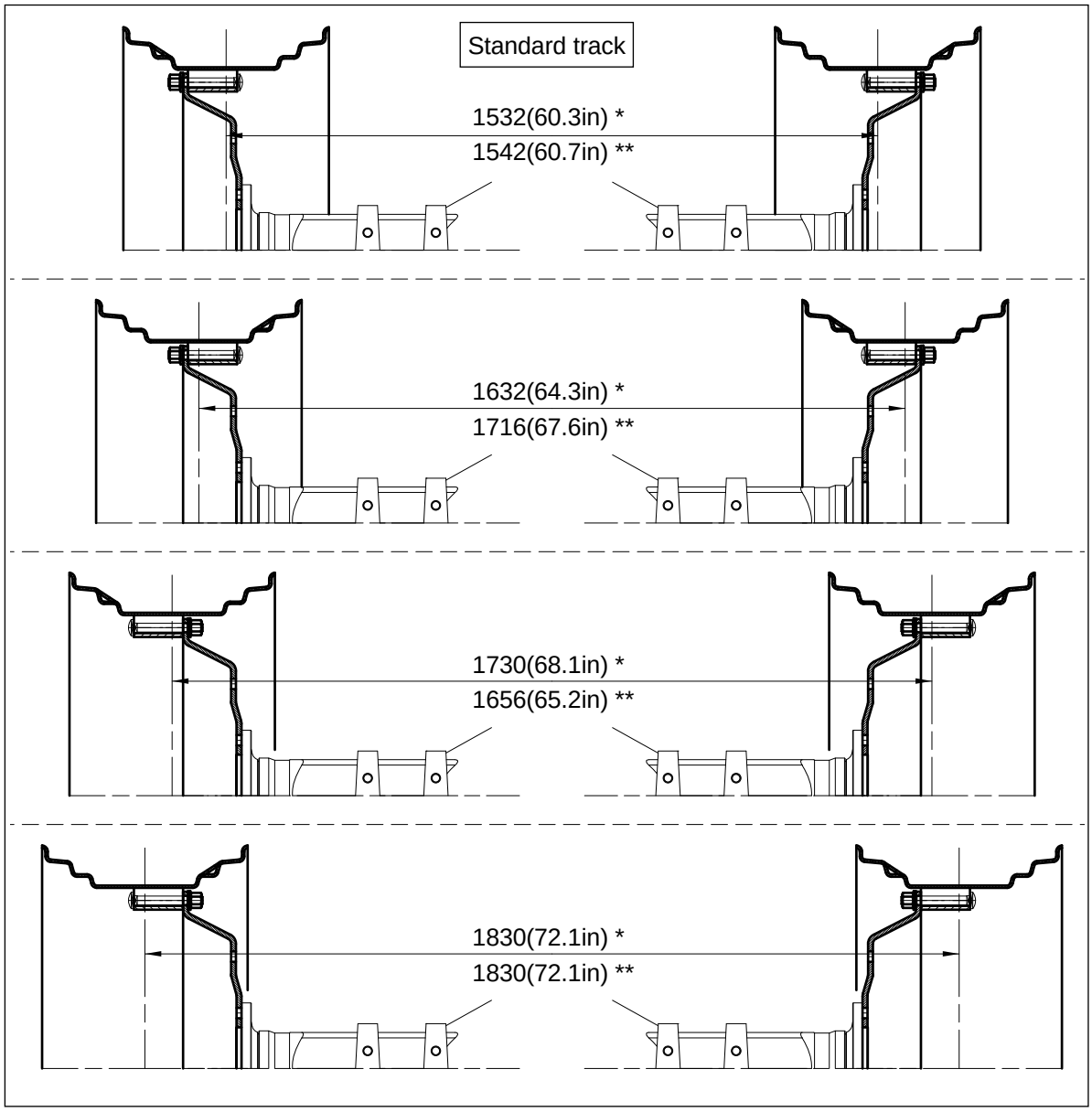
8th track



1806(71.1in) *
1802(70.9in) **

- **REAR WHEEL TRACK (Tire & Wheel assembly : * : 16.9-30 / ** : 18.4-30)**

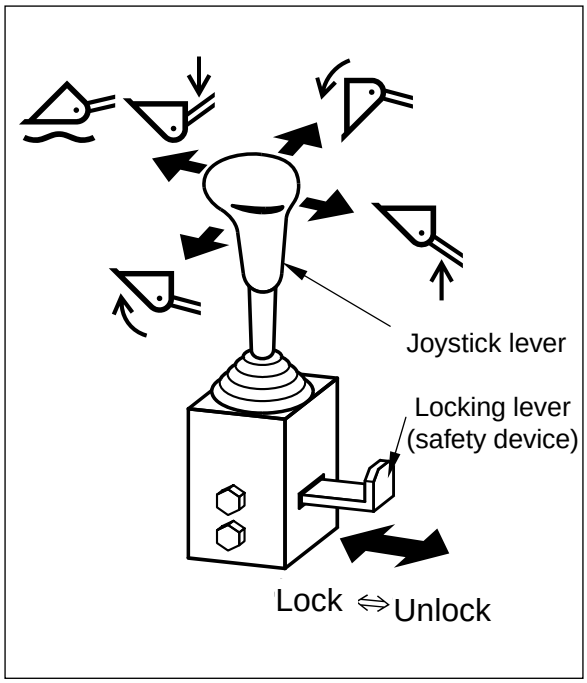
Unit : mm (inch)



Notice	▶ When adjusting the wheel track, pay attention to the direction of tire lugs. if it shows **"/\" shape** when looked behind, it is correct. ▶ **Actual settings may vary depending on the brand of the rim and type of tire.**

(8) Using Front-end loader (if fitted)

① Safety precautions



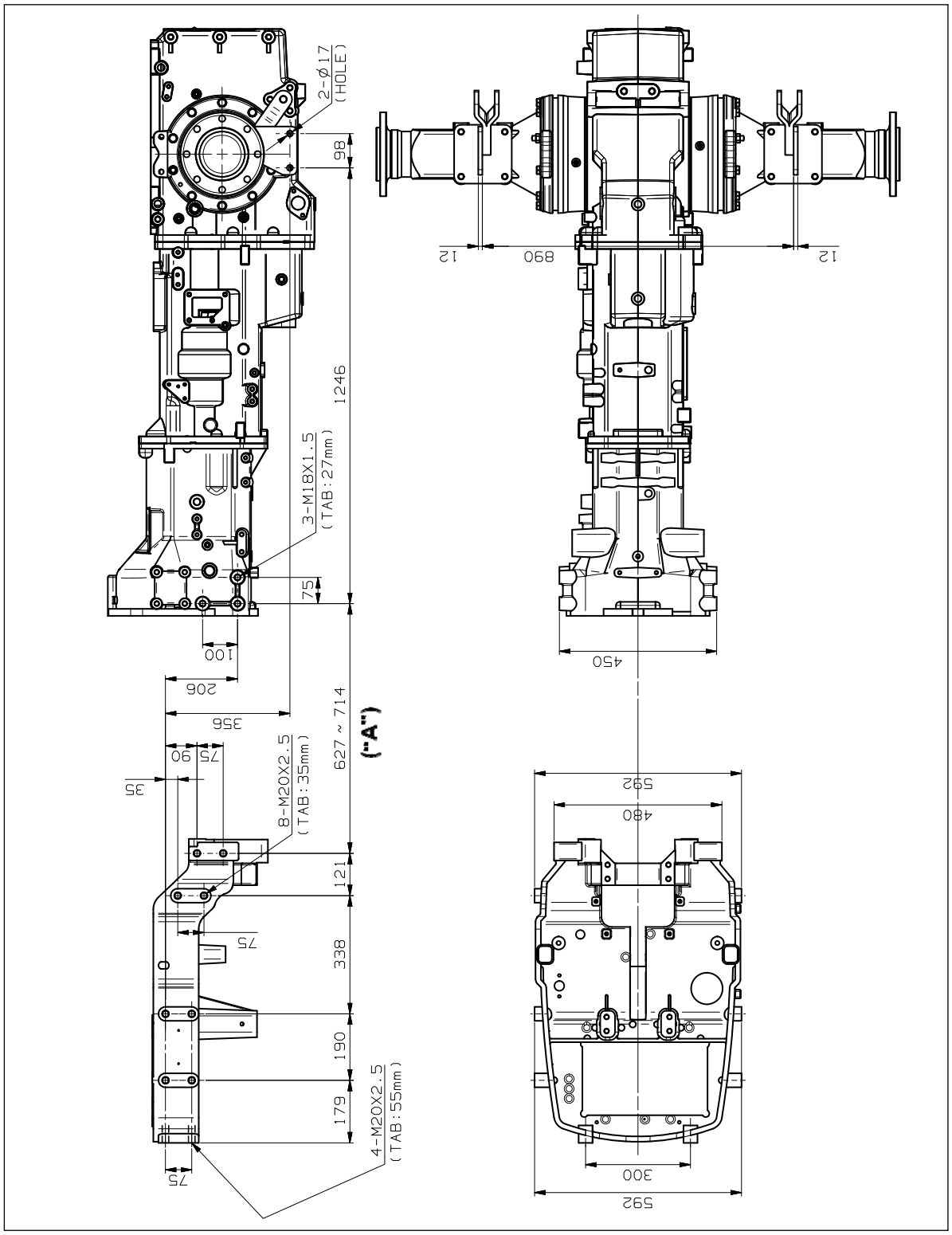
- Multi-functional joystick lever provides you more convenient operation for front-end loader.
- When operating the tractor with front-end loader, The center of gravity of the tractor may be higher, and the stability of the vehicle may be worse than unattached vehicle.
  -. DO NOT drive fast on a traffic load. The rolling or tipping of the tractor can be happened easily.
  -. When loading/unloading the bucket on a slope, move the tractor straight against the slope.
  -. DO NOT try to approach a stiff slope.
  -. Attach the ballast weight on the 3-point linkage to prevent the overload of the front axle, and to improve the stability of the vehicle.
- When working with front-end loader, the front visibility of the tractor may be worse than unattached vehicle. Have to observe people and other vehicles around the tractor.
- DO NOT allow to stay people under the front-end loader.
- DO NOT allow people on the bucket.
- Only install a front-end loader with a parallel guidance system and use it all the time; this system will ensure that the load in the bucket will remain horizontal, regardless of the height of the lifting booms.

⚠Warning	▶After using the front-end loader, lock the joystick lever to prevent the accident. (if fitted) ▶When leaving the tractor, lower down the front-end loader on ground.

⚠Warning	▶Have to strictly observe the following precautions; - Do not lift the front-end loader to a height from which objects may fall or roll onto the driver. - Use always the correct attachment (grab forks, buckets.. etc) for the specific task to perform and ensure that the load is securely kept in place.

② Attaching points for Front-end loader

- When attaching the front-end loader, refer to the drawings as below. (Unit : mm)



Dimension	P7010 / 7020 / 7030	P7040
A	627mm (24.69 in.)	714mm (28.11 in.)

(9) Adjusting Steering angle

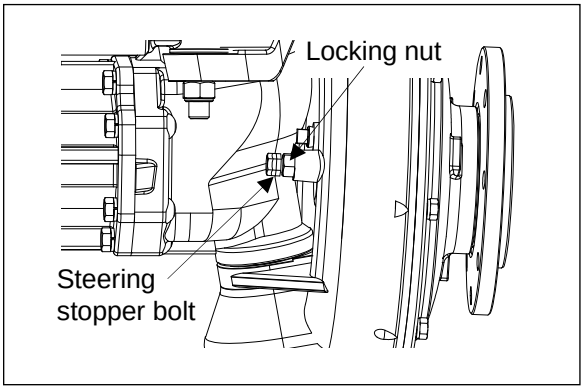
- If the front wheel track is adjusted or front tires are replaced with new tires having bigger diameter or width, or one of the front equipments is attached, the steering angle must be adjusted as below.

1) Loosen the locking nut on both sides.

2) Connect the front hook of the tractor to the crane by using specified wire. And, lift up the front axle off the ground sufficiently.

3) Lift up one side of the front axle fully and turn the steering wheel to the left and right with checking that the clearances between tire and other parts are over 20mm (0.8 in.) at least.

4) At this time, set each steering stopper of the both sides to be contacted with the cast. Check all the possible interferences by combinations of the steering and oscillation of the front axle.



5) Tighten the locking nuts of the each side.

Notice	▶DO NOT shorten the length of the steering stopper rather than factory condition. If the stopper does not contact at maximum steering condition, it can damage the steering cylinder or tie-rod.

(10) Recommended maximum specification of implements

- When attaching implements to the tractor, refer to the followings recommended as maximum specification of each implement. DO NOT attach bigger implements then this specification. For other implements, contact your authorized dealer.

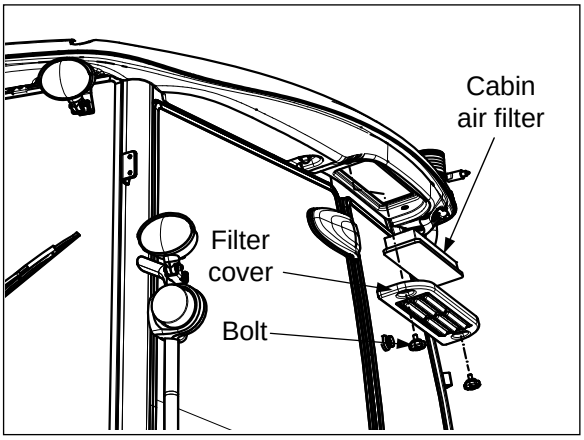
No.	Implements	Specification	P7010	P7020	P7030	P7040
1	Front loader	Max lift capacity (Bucket pivot point)	1588 kg (3501 lb)	1588 kg (3501 lb)	1588 kg (3501 lb)	1588 kg (3501 lb)
2	Rotavator	Max tilling width	2150 mm (84.6 in)	2200 mm (86.6 in)	2350 mm (92.5 in)	2530 mm (99.6 in)
3	Backhoe	Max digging depth	-	-	-	-
4	Rotary cutter	Max working width	2438 mm (96 in)	2438 mm (96 in)	2743 mm (108 in)	2743 mm (108 in)
5	Mid mower	Max working width	-	-	-	-
6	Landscape lake	Max working width	2134 mm (84 in)	2134 mm (84 in)	2438 mm (96 in)	2438 mm (96 in)
7	Box blade	Max working width	2134 mm (84 in)	2134 mm (84 in)	2438 mm (96 in)	2438 mm (96 in)
8	Rear blade	Max working width	2438 mm (96 in)	2438 mm (96 in)	2743 mm (108 in)	2743 mm (108 in)

4-5. Working in hazardous area

● **Level of protection against hazardous substances : For cabin model**, it provides protection against hazardous substances **according to EN15695-1:2009 (Category 2).** But it can provide only dust protection level by pressurizing air in the cabin with air filters. Do not use the tractor with crop sprayers in hazardous area. If unavoidable, comply with the following instruction.

① Cabin air filters (LH/RH)

- When operating with pesticides, cabin air filters should be replaced with specific charcoal filters. Contact your authorized dealer.
- In additional, you should wear the protective clothing, globes, mask, etc before operating in such a hazardous spraying area.
- These filters must only be fitted when working with pesticides and replaced with the normal paper filters at the end of work.



⚠ Caution	▶ Do not use these filters during other work, as they will quickly become clogged with dust. When replacing the charcoal filters at the end of spraying work, return them to the original packaging and make sure that they are carefully sealed. ▶ The charcoal filters last for approximately 50 hours of work. They must, however, be replaced each year. If, when working with pesticides, toxic odors are noted, stop the work immediately and replace the filters with new one. ▶ These filters must never be washed or cleaned with compressed air. Discarded filters must not be thrown away. Take disposed filters to authorized collection points.

⚠ Warning	▶ The charcoal filters do not guarantee full protection against all pesticides. ▶ These specific filters only reduce the harmful effects of these products. As a result, operator has to comply with the safety rules recommended for using each single product. Wear the protection clothing, globes, mask, etc before operating in that area. ▶ DO NOT operate the tractor in heavy pesticides or other hazardous spraying area.

Notice	▶ The filters are made of specially treated media with a rubber sealing strip bonded around the sides. Take care not to damage the element during installation.

② Cleaning the cabin inside

- Protective clothing worn when handling the sprayer with pesticides or when carrying out external works, must be removed and stored away carefully before re-entering the cabin.
- After working with pesticides, ventilate the cabin and clean the inside parts (interior trim, panels, step, etc) of the cabin with clean damp cloth to remove the chemical residue.

4-6. Driving speed

- The driving speed of tractor or the revolution speed of PTO depends on the work, tire and ground condition. For safety, operate the tractor at suitable speed.
- **Table of driving speed (unit : Km/h -> Mile/h)**

P7010 / P7020 w/synchro shuttle

- **Standard gear**

Range gear	1				2				3			
Main gear	1	2	3	4	1	2	3	4	1	2	3	4
Forward	1.74 (1.08)	2.45 (1.52)	3.50 (2.17)	5.03 (3.13)	4.75 (2.95)	6.69 (4.16)	9.57 (5.95)	13.72 (8.53)	12.16 (7.56)	17.15 (10.66)	24.51 (15.23)	35.14 (21.83)
Reverse	1.83 (1.14)	2.58 (1.60)	3.68 (2.29)	5.28 (3.28)	4.99 (3.10)	7.04 (4.37)	10.06 (6.25)	14.42 (8.96)	12.78 (7.94)	18.03 (11.20)	25.77 (16.01)	36.94 (22.95)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 695mm (27.4 in.)

- **Creeper gear (if fitted)**

Range gear		1				2			
Main gear		1	2	3	4	1	2	3	4
ON	Forward	0.19 (0.12)	0.26 (0.16)	0.37 (0.23)	0.54 (0.34)	0.51 (0.32)	0.72 (0.45)	1.02 (0.63)	1.47 (0.91)
	Reverse	0.20 (0.12)	0.28 (0.17)	0.39 (0.24)	0.58 (0.36)	0.53 (0.33)	0.75 (0.47)	1.08 (0.67)	1.54 (0.96)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 695mm (27.4 in.)

● **Driving speed (unit : Km/h -> Mile/h)**

P7010 / P7020 w/power shuttle (optional)

● **Standard gear**

Range gear	1				2				3			
Main gear	1	2	3	4	1	2	3	4	1	2	3	4
Forward – HIGH	1.76 (1.09)	2.49 (1.55)	3.56 (2.21)	5.10 (3.17)	4.82 (3.00)	6.79 (4.22)	9.71 (6.03)	13.92 (8.65)	12.34 (7.67)	17.40 (10.81)	24.86 (15.45)	35.65 (22.15)
Forward – LOW	1.46 (0.91)	2.05 (1.27)	2.93 (1.82)	4.21 (2.62)	3.97 (2.47)	5.60 (3.48)	8.01 (4.98)	11.49 (7.14)	10.18 (6.33)	14.36 (8.92)	20.52 (12.75)	29.42 (18.28)
Reverse – HIGH	1.82 (1.13)	2.57 (1.60)	3.67 (2.28)	5.27 (3.27)	4.97 (3.09)	7.01 (4.36)	10.02 (6.23)	14.37 (8.93)	12.74 (7.92)	17.97 (11.17)	25.68 (15.96)	36.81 (22.87)
Reverse – LOW	1.50 (0.93)	2.12 (1.32)	3.03 (1.88)	4.35 (2.70)	4.11 (2.55)	5.79 (3.60)	8.27 (5.14)	11.86 (7.37)	10.52 (6.54)	14.83 (9.21)	21.19 (13.17)	30.38 (18.88)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 695mm (27.4 in.)

● **Creeper gear (if fitted)**

Range gear	1				2			
Main gear	1	2	3	4	1	2	3	4
Forward – HIGH	0.19 (0.12)	0.27 (0.17)	0.38 (0.24)	0.54 (0.34)	0.51 (0.32)	0.73 (0.45)	1.04 (0.65)	1.49 (0.93)
Forward – HIGH	0.16 (0.10)	0.22 (0.14)	0.31 (0.19)	0.45 (0.28)	0.42 (0.26)	0.60 (0.47)	0.86 (0.53)	1.23 (0.76)
Reverse – HIGH	0.19 (0.12)	0.27 (0.17)	0.39 (0.24)	0.56 (0.35)	0.53 (0.33)	0.75 (0.47)	1.07 (0.66)	1.54 (0.96)
Reverse – HIGH	0.16 (0.10)	0.23 (0.14)	0.32 (0.20)	0.46 (0.29)	0.44 (0.27)	0.62 (0.39)	0.88 (0.55)	1.27 (0.79)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 695mm (27.4 in.)

● **Driving speed (unit : Km/h -> Mile/h)**

P7030 / P7040 w/synchro shuttle

● **Standard gear**

Range gear	1				2				3			
Main gear	1	2	3	4	1	2	3	4	1	2	3	4
Forward	1.80 (1.12)	2.54 (1.58)	3.63 (2.26)	5.21 (3.24)	4.92 (3.06)	6.93 (4.31)	9.91 (6.16)	14.21 (8.83)	12.60 (7.83)	17.76 (11.04)	25.39 (15.78)	36.40 (22.62)
Reverse	1.89 (1.17)	2.67 (1.66)	3.82 (2.37)	5.47 (3.40)	5.17 (3.21)	7.29 (4.53)	10.42 (6.47)	14.94 (9.28)	13.24 (8.22)	18.68 (11.60)	26.69 (16.58)	38.27 (23.28)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 720mm (28.4 in.)

● **Creeper gear (if fitted)**

Range gear		1				2			
Main gear		1	2	3	4	1	2	3	4
ON	Forward	0.19 (0.12)	0.27 (0.17)	0.39 (0.24)	0.56 (0.35)	0.53 (0.33)	0.74 (0.46)	1.06 (0.66)	1.52 (0.94)
	Reverse	0.20 (0.12)	0.29 (0.18)	0.41 (0.25)	0.58 (0.36)	0.55 (0.34)	0.78 (0.48)	1.11 (0.69)	1.60 (0.99)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 720mm (28.4 in.)

● **Driving speed (unit : Km/h -> Mile/h)**

P7030 w/power shuttle (optional)

● **Standard gear**

Range gear	1				2				3			
Main gear	1	2	3	4	1	2	3	4	1	2	3	4
Forward – HIGH	1.83 (1.14)	2.58 (1.60)	3.68 (2.29)	5.28 (3.28)	4.99 (3.10)	7.04 (4.37)	10.06 (6.25)	14.42 (8.96)	12.78 (7.94)	18.02 (11.20)	25.76 (16.00)	36.93 (22.95)
Forward – LOW	1.51 (0.94)	2.13 (1.32)	3.04 (1.89)	4.36 (2.71)	4.12 (2.56)	5.81 (3.61)	8.30 (5.16)	11.90 (7.39)	10.55 (6.56)	14.87 (9.24)	21.26 (13.21)	30.48 (18.94)
Reverse – HIGH	1.89 (1.17)	2.66 (1.65)	3.80 (2.36)	5.45 (3.39)	5.15 (3.20)	7.27 (4.52)	10.38 (6.45)	14.89 (9.25)	13.20 (8.20)	18.61 (11.56)	26.60 (16.53)	38.14 (23.70)
Reverse – LOW	1.56 (0.97)	2.20 (1.37)	3.14 (1.95)	4.50 (2.80)	4.25 (2.64)	6.00 (3.73)	8.57 (5.33)	12.29 (7.64)	10.89 (6.77)	15.36 (9.54)	21.95 (13.64)	31.48 (19.56)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 720mm (28.4 in.)

● **Creeper gear (if fitted)**

Range gear	1				2			
Main gear	1	2	3	4	1	2	3	4
Forward – HIGH	0.20 (0.12)	0.28 (0.17)	0.39 (0.24)	0.56 (0.35)	0.53 (0.33)	0.75 (0.47)	1.07 (0.66)	1.54 (0.96)
Forward – LOW	0.16 (0.10)	0.23 (0.14)	0.32 (0.20)	0.47 (0.29)	0.44 (0.27)	0.62 (0.39)	0.89 (0.55)	1.27 (0.79)
Reverse – HIGH	0.20 (0.12)	0.28 (0.17)	0.41 (0.25)	0.58 (0.36)	0.55 (0.34)	0.78 (0.48)	1.11 (0.69)	1.59 (0.99)
Reverse – LOW	0.17 (0.11)	0.23 (0.14)	0.34 (0.21)	0.48 (0.30)	0.45 (0.28)	0.64 (0.40)	0.92 (0.57)	1.31 (0.81)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 720mm (28.4 in.)

● **Driving speed (unit : Km/h -> Mile/h)**

P7040 w/power shuttle (optional)

● **Standard gear**

Range gear	1				2				3			
Main gear	1	2	3	4	1	2	3	4	1	2	3	4
Forward – HIGH	1.95 (1.21)	2.76 (1.71)	3.94 (2.45)	5.65 (3.51)	5.34 (3.32)	7.52 (4.68)	10.75 (6.68)	15.42 (9.58)	13.67 (8.49)	19.27 (11.98)	27.55 (17.12)	39.49 (24.54)
Forward – LOW	1.61 (1.00)	2.27 (1.41)	3.25 (2.02)	4.66 (2.90)	4.40 (2.74)	6.21 (3.86)	8.88 (5.51)	12.72 (7.91)	11.28 (7.01)	15.91 (9.88)	22.73 (14.13)	32.60 (20.25)
Reverse – HIGH	2.02 (1.25)	2.85 (1.77)	4.07 (2.53)	5.83 (3.62)	5.51 (3.42)	7.77 (4.83)	11.11 (6.90)	15.92 (9.89)	14.12 (8.77)	19.90 (12.37)	28.45 (17.68)	40.79 (25.34)
Reverse – LOW	1.67 (1.04)	2.35 (1.46)	3.36 (2.09)	4.81 (2.99)	4.55 (2.83)	6.41 (3.98)	9.17 (5.70)	13.14 (8.17)	11.65 (7.24)	16.43 (10.21)	23.48 (14.59)	33.66 (20.92)

Note) Engine rated speed : 2300rev/min, Dynamic load radius : 770mm (30.3 in.)

● **Creeper gear (if fitted)**

Range gear	1				2			
Main gear	1	2	3	4	1	2	3	4
Forward – HIGH	0.21 (0.13)	0.29 (0.18)	0.42 (0.26)	0.60 (0.38)	0.57 (0.35)	0.80 (0.50)	1.15 (0.71)	1.65 (1.02)
Forward – LOW	0.17 (0.11)	0.24 (0.15)	0.35 (0.22)	0.50 (0.31)	0.47 (0.29)	0.66 (0.41)	0.95 (0.59)	1.36 (0.85)
Reverse – HIGH	0.22 (0.13)	0.30 (0.19)	0.43 (0.27)	0.62 (0.39)	0.59 (0.37)	0.83 (0.52)	1.19 (0.74)	1.70 (1.06)
Reverse – LOW	0.18 (0.11)	0.25 (0.16)	0.36 (0.22)	0.51 (0.32)	0.49 (0.30)	0.69 (0.43)	0.98 (0.61)	1.40 (0.87)

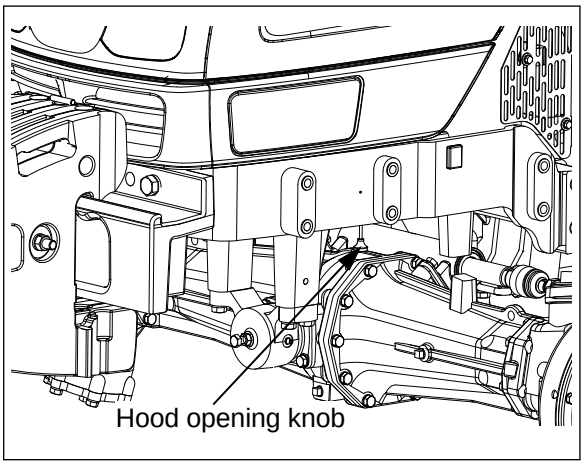
Note) Engine rated speed : 2300rev/min, Dynamic load radius : 770mm (30.3 in.)

5. Lubrication and Maintenance

5-1. Access for maintenance

① Opening Hood

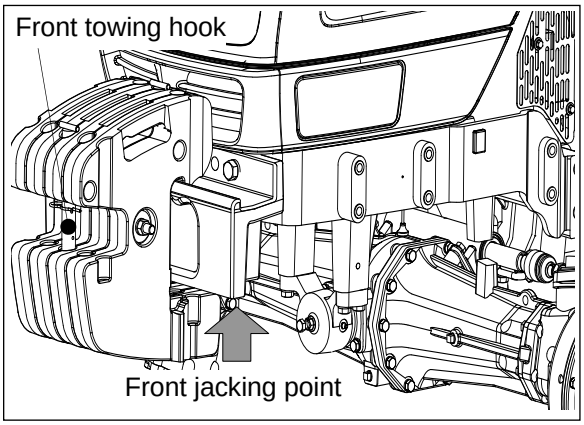
- For safety, the hood must be closed and correctly latched before operating the tractor.
- The hood is hinged at the rear and a gas cylinder is attached to provide easy access to the engine for check and maintenance.
- To open the hood, pull the hood opening knob and lift the hood up.
- To close the hood, pull the hood and push it down to locking position slightly.

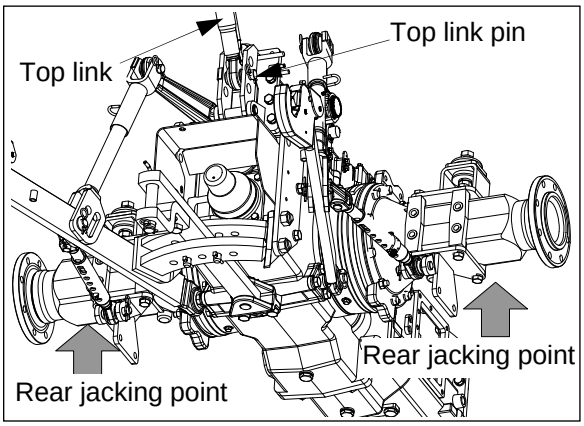


⚠ Caution	▶ After the engine has stopped completely, you have to open the hood for checking. ▶ If you open the hood while the engine is running, it can cause serious damage by the intended or unintended access to the rotating shaft, pulley, V-belt, cooling fan of the engine or engine application parts. BE CAREFUL.

② Jacking points

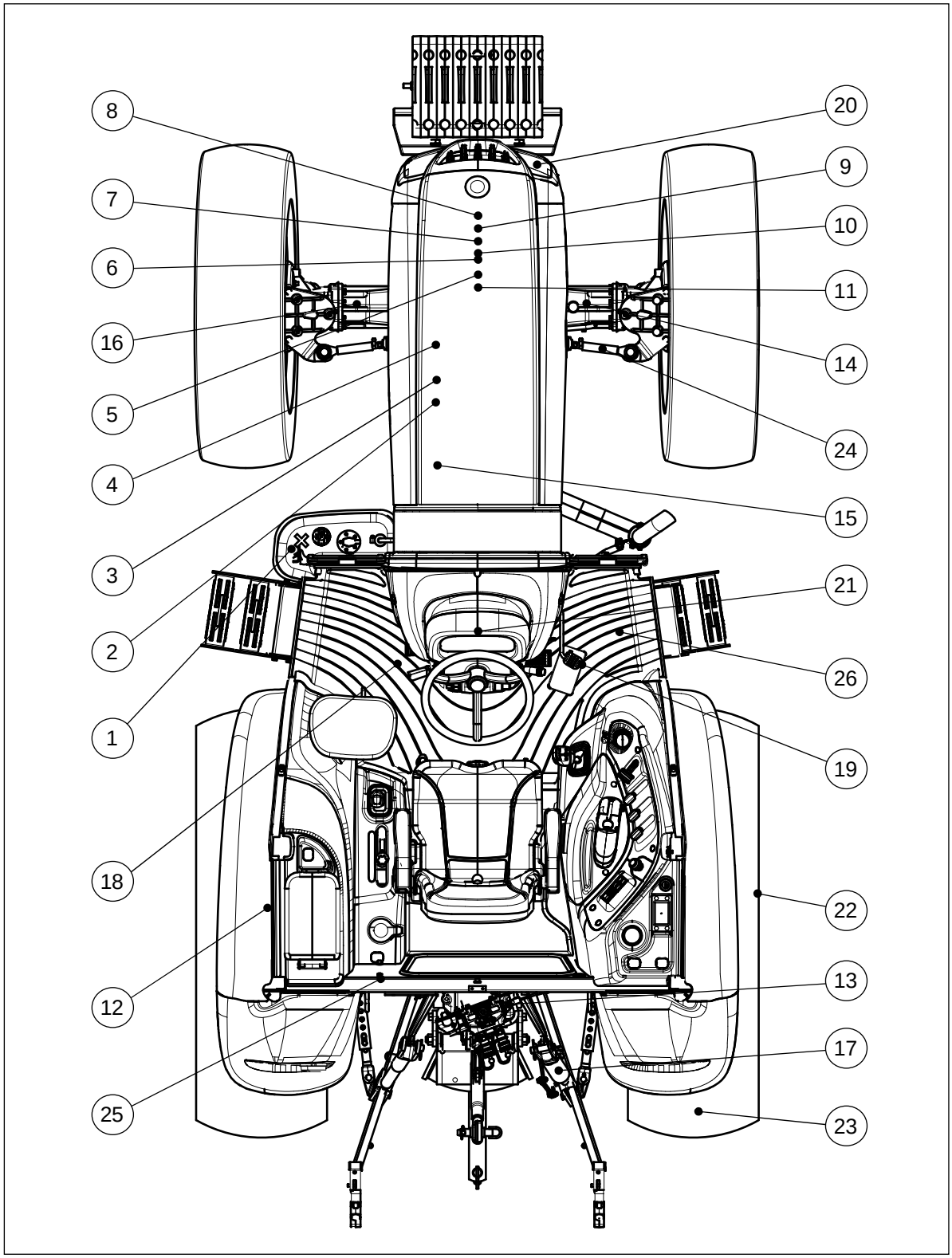
- The jacking points for maintenance is depending on serviced parts case by case. Do not hesitate to contact your authorized dealer for asking.
- Do not use the front axle assembly or steering linkage and cylinder for jacking point. These components have some rotating pivots and/or does not have enough structural strength.
- For general maintenance, use flat surface under the engine frame end or bumper for jacking point, and connect additionally hoist to the front towing hook for safety.
- For rear jacking points, flat surface under the rear axle housing is recommended, and additionally use the top-link bracket and its pin for lifting point after removing the top-link.





⚠ Caution	▶ When lifting the rear of the tractor, apply chocks to the slots between front axle and engine frame symmetrically to prevent the rolling of the front axle.

5-2. Maintenance chart



No.	Checking Parts	Page No.	Check period (hr)					
			Daily	50	300	600	1000 or 1year	1200 or 2year
1	Fuel tank	5-8	▲					
2	Fuel filter	5-23				●		
3	Engine oil	5-7, 5-17	▲		●			
4	Engine oil filter	5-5, 5-17		★	●			
5	Engine coolant	5-10, 5-25	▲					●
6	Radiator screen	5-11, 5-14	▲	■				
7	Air cleaner	5-10, 5-15, 5-24	▲	■			●	
8	Battery	5-15		▲				
9	Fan belt tension	5-21			▲			
10	Valve clearance	5-24						▲
11	Nozzle injection pressure	5-23				▲		
12	Hydraulic oil filter	5-5, 5-19		★	●			
13	Transmission oil	5-15, 5-22		▲		●		
14	Front axle oil	5-15, 5-22		▲		●		
15	Brake oil	5-20			▲			
16	Front axle holder	5-14		▲				
17	3-Point linkage	5-14		▲				
18	Clutch pedal play	5-12	▲					
19	Brake pedal play	5-13	▲					
20	Turn signal lights, Lights, Horn	5-9	▲					
21	Instrument panel & Indicators	5-8	▲					
22	Bolts and Nuts	5-12	▲					
23	Tire air pressure	5-11	▲					
24	Toe-in	5-21			▲			
25	Cabin air filter	5-16, 5-23		■		●		
26	Power shuttle filter	5-5, 5-19		★	●			
27	Hydraulic hoses	5-15		▲				

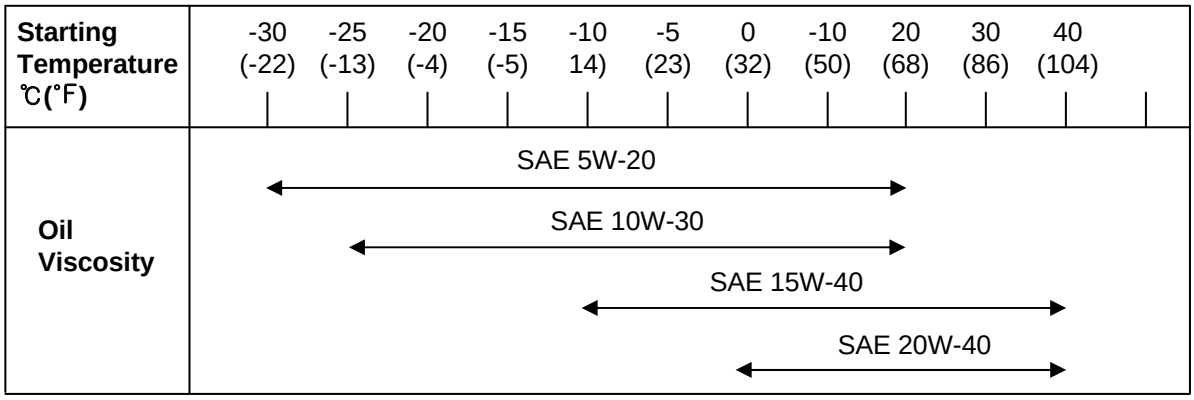
★ First Replacement ● Replacement ▲ Check, Adjustment and Supply ■ Clean up

5-3. Lubricants and Capacity

Lubricants	Capacity	International Standard		Recommended items
Engine coolant (Radiator)	10.5 L (2.8 U.S.gals.)	ASTM D5216		Soft water (50%) + Anti-freeze (50%)
Fuel	100 L (26.4 U.S.gals.)	ASTM D975 No.2		Low Sulfuric Diesel Fuel
Engine oil (Crank case)	9 L (2.3 U.S.gals.)	API CF-4 or CG-4 (Refer to the below table)		KIXX DL (Maker : GS Caltex)
Transmission oil (common use for hydraulic lift and steering system)	55 L (14.5 U.S.gals.)	Mechanical	API GL4 ISO VG 46/68	LSTH570 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
		Power shuttle	API GL4 ISO VG 32/46	LSTH400 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
Front axle oil	12 L (3.1 U.S.gals.)	API GL4 SAE 80W		EPK 80W90 (Maker : S-OIL TOTAL Co. Ltd.)
Grease	Proper amount	NLGI 2		
Clutch & Brake oil	0.5 L (0.1 U.S.gals.)	ISO 7308		Rando HD Z 32/46

RECOMMENDED OIL VISCOSITIES

The correct engine oil viscosity grade is dependent upon ambient temperature. Refer to the chart below when selecting oil for your tractor engine.
In areas where prolonged periods of extreme temperatures are encountered, local lubricant practices are acceptable ; such as the use of SAE 5W 30 in extreme low temperatures or SAE 50 in extreme high temperatures.



5-4. First 50 hour check

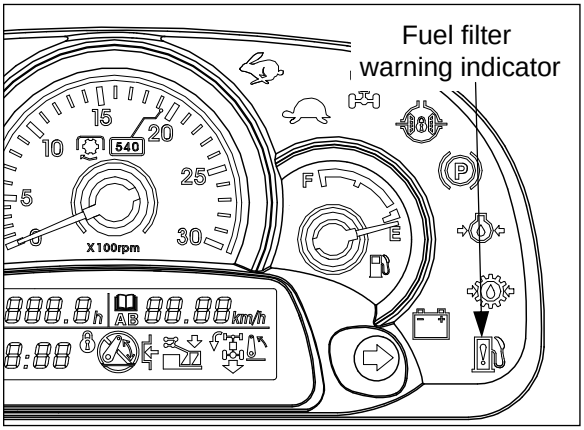
- After using first 50 hours, contact your authorized dealer for maintenance if possible.
  - Replace engine oil filter. (⇒ Refer to Every 300 hour check. *See page 5-17*)
  - Replace hydraulic oil filter. (⇒ Refer to Every 300 hour check. *See page 5-19*)
  - Replace power shuttle oil filter. (⇒ Refer to Every 300 hour check. *See page 5-19*)
  - Check transmission / rear axle / hydraulics oil level
  - Check front axle oil level
  - Check and adjust parking brake
  - Check torque of exhaust manifold bolts
  - Check and adjust V-belts and tension
  - Tighten all cooling system hose connections
  - Check torque of safety cab or frame mounting bolts
  - Check torque of front end weight clamp bolts (Where fitted)
  - Check torque of wheel bolts and nuts
  - Check tire pressures and condition
  - Clean radiator, oil cooler and A/C condenser cores (Where fitted)
  - Check radiator coolant level and specific gravity
  - Check clutch pedal free play
  - Check brake adjustment and pedal equalization
  - Lubricate all grease fittings
  - Neutral start switches operative

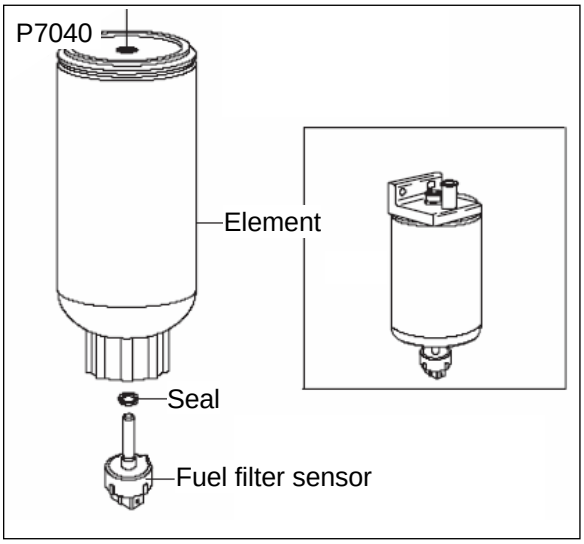
5-5. When the warning indicator lights

(1) Fuel filter warning indicator

① P7040 ONLY

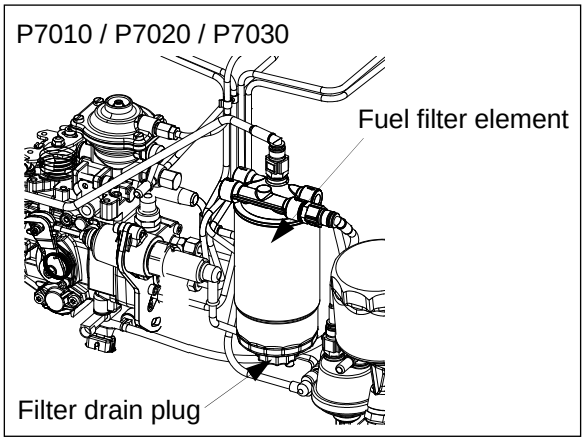
- Apply parking brake and set a container under the filter.
- Loosen the drain plug and drain water inside of the filter. (Approx. 150cc(9.1 in³))
- If the pure fuel comes out, tighten the drain plug (max. 0.5 N.m), and bleed the air from the fuel filter. (*See page 5-26*)





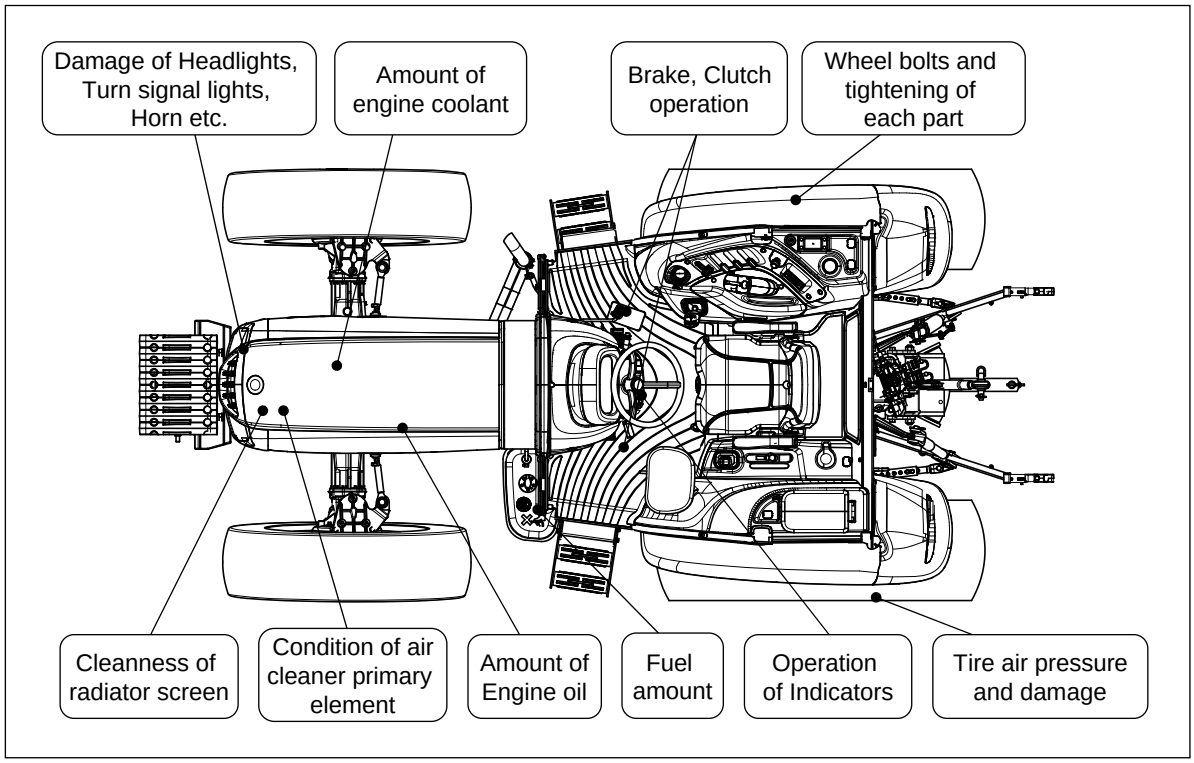
② P7010 / P7020 / P7030

- For P7010/P7020/P7030 models, the alert system by the fuel filter warning indicator is NOT available.
- Loosen the drain plug and remove water periodically inside of the fuel filter.
- If the pure fuel comes out, tighten the drain plug (max. 0.5 N.m), and bleed the air from the fuel filter. (*See page 5-26*)



5-6. Checking Before Starting (Daily check)

● Before starting engine, check the followings carefully to avoid any failure or damage.


Damage of Headlights, Turn signal lights, Horn etc.
Amount of engine coolant
Brake, Clutch operation
Wheel bolts and tightening of each part
Cleanness of radiator screen
Condition of air cleaner primary element
Amount of Engine oil
Fuel amount
Operation of Indicators
Tire air pressure and damage

(1) Engine oil

● **Oil capacity : 9 L (2.4 U.S.gals.)**

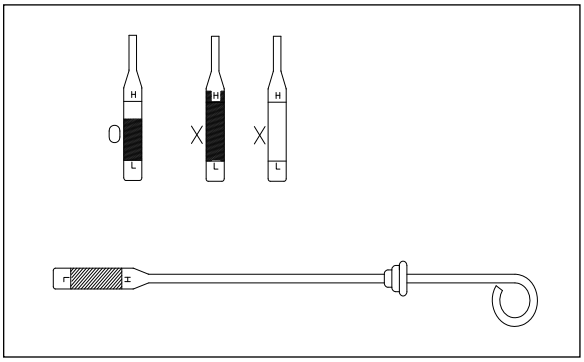
● **Using Engine oil**

- Diesel engine oil ; API CF-4 or CG-4 class.
Select Engine oil depending on the temperature as shown in the table.

Season	Temperature	Lubricant No.
Winter	0℃~-20℃ (32˚F~ -4 ˚F)	SAE 10W/30
Spring/ Fall	0℃~20℃ (32˚F~ 68 ˚F)	SAE 15W/40
Summer	≥20℃ (≥68 ˚F)	SAE 20W/40

● **Checking oil level**

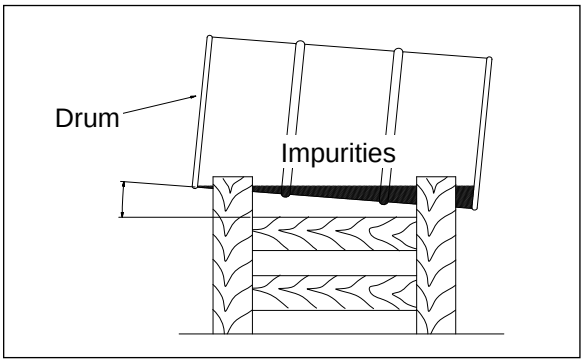
- Check it before starting engine or at 5 minutes later after stopping engine.
- Check if the oil level is between “Max” and “Min” scale of oil gauge.
- It must only be performed while engine is stopped.



(2) Fuel tank

① Tank capacity : 100L (26.4 U.S.gals.)

② Using Fuel



- Use low sulfuric diesel.
- If contaminants like water or dusts are mixed in the fuel, it may cause a severe damage to the engine. To fill the tank, the fuel storage facility must be equipped as shown in the figure. If possible, fill the tank at the gas station.

③ Using Diesel for winter

- General diesel fuel tends to generate paraffin dregs In winter time which may cause a bad engine start. Thus, it is recommended to use diesel for winter in winter time.
- If the ambient temperature is below -15°C(5°F), it is advised to mix diesel with kerosene as shown on the right.

Temp.	≥ -15℃ (5°F)	≤-15℃ (5°F)
Fuel	Diesel fuel for winter time 100%	20% kerosene added

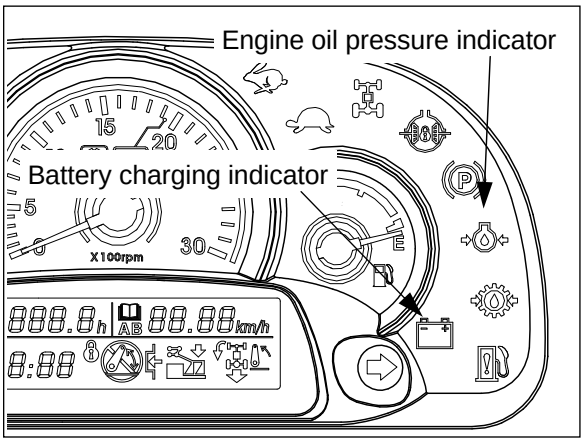
④ Checking Fuel level

- Check the fuel gauge and if it's not sufficient, fill the fuel tank with fuel.

Notice	▶ If the engine stops after finishing work, fill the tank fully. As the temperature drops down, the humidity in the fuel tank is condensed and may mix with the fuel.

(3) Instrument panel & Indicators

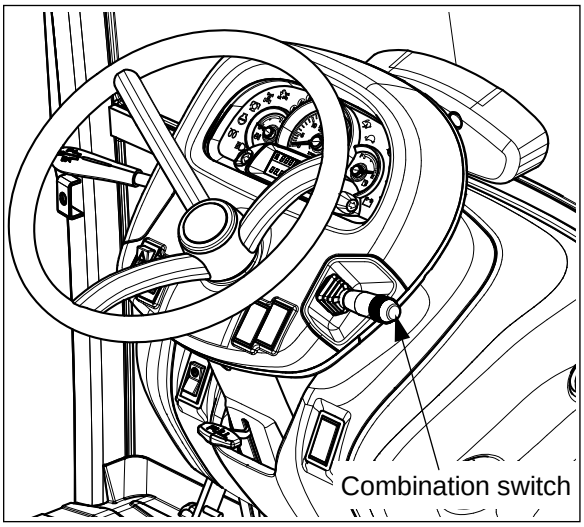
- Turn the key switch to "ON" position and check if the engine oil pressure indicator and battery charging indicator are ON.
- If the indicators are not "OFF" after starting engine, Contact your authorized dealer for check.



(4) Turn signal lights, Lights and Horn

- Check the operation of lights, turn signal lights, horn etc.
- If the light is OFF suddenly when operating the switch, check the problems as followings.

1. Check the corresponding fuse in the fuse box.
2. Check the light bulb. If necessary, replace it by a new one as referring to below.



Illuminating Lights	Light bulb specification
Headlights (Low beam / High beam)	12V 55W / 60W
Turn signal lights / Side lights (front)	12V 21W / 5W
Turn signal lights (rear)	12V 21W
Brake lights / Tail lights (rear)	12V 21W / 5W
Work light	12V 35W(Grille), 37.5W(Cab), 35W(Roll-bar)
Instrument panel lights	LED
Warning indicators	LED
Indoor light (Cabin only)	12V 10W

Notice	▶ Use the bulb of rated capacity. ▶ In case of using the improper bulb, it may cause a failure of electric system

(5) Engine coolant

- Refer to " Replacement of Engine coolant " *(See page 5-25)*

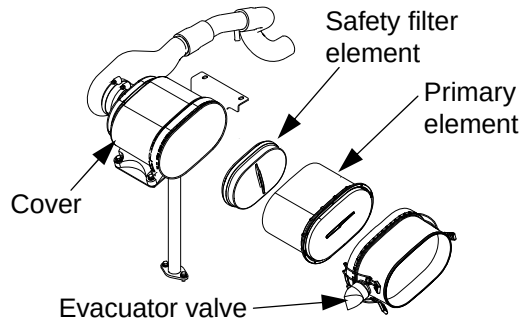
(6) Air cleaner

① Cleaning filter element

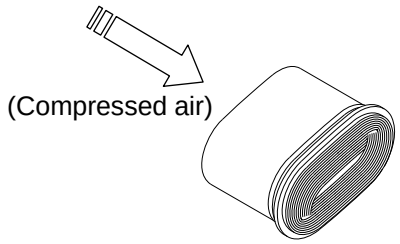
- Remove the cover and pull the primary element straight out, ensuring the safety filter element remains in place. (Fig. 1)
- When cleaning the element in the working field, tap the element by hand to remove the dust.

Notice	▶ Do not tap the element on a hard place when cleaning. ▶ If the element is cracked, change it with new one.

- If the dust is not removed by tapping, use compressed air (less than 500kPa (5bar; 72psi)) from inside to outside as shown in the right figure (Fig. 2) to remove the dust and foreign materials. And clean inside the filter element with a clean damp cloth.



<Figure-1>



< Figure-2 >

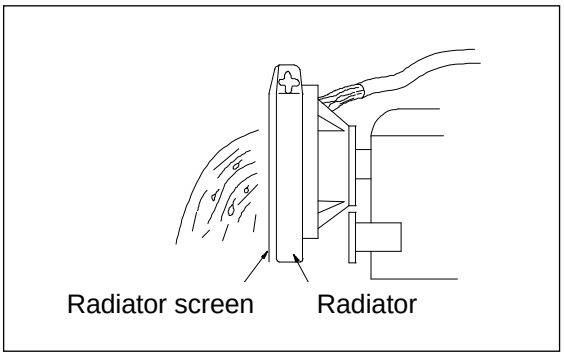
Notice	▶ Do not assemble a wet filter element. ▶ Do not dry the wet filter element by using the compressed air. ▶ Do not start the engine if air filter element is not assembled.

② Filter assembly

- Clean the inside of the air cleaner housing using a clean damp cloth, taking care not to damage the safety element.
- Check if there is damage inside filter element by using a light. If there is tiny crack or small hole in the filter element or the gasket is damaged, replace it with a new one.
- Insert the filter element by pushing it deeply into the filter housing.
- Remove the dust of the evacuator valve and clean the inside of the cover.
- Assemble the cover with the evacuator valve placed downward.

Notice	▶ Do not start the engine or close the hood if the filter element is not assembled..

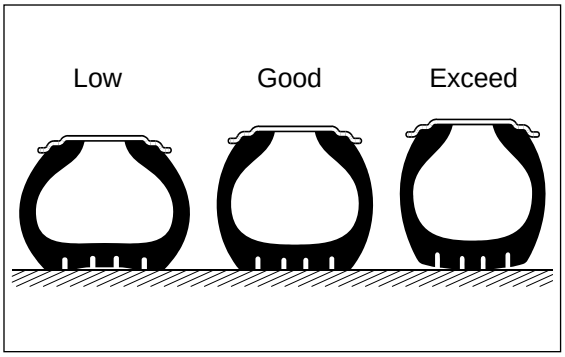
(7) Cleaning Radiator and Radiator screen



- Remove dust or dry grass stuck to the radiator or radiator screen daily.
- When cleaning the radiator with water, let water flow from the fan side.

⚠ Caution	▶ If lots of foreign materials or dry grasses are stuck to radiator screen or the fan is damaged or transformed, the cooling efficiency shall be reduced and the engine can be overheated. ▶ Radiator must be cleaned only after the engine has stopped.

(8) Tire air pressure and damage



① Check

- Check the air pressure or the damage of the tires daily. Always use the correct pressure for each axle, and If the tire is damaged, change it with a new one.
- Ensure tire pressures are not lower than the correct values, to prevent ;
  - blown tires;
  - bead wear;
  - internal damage;
  - irregular wear and short service life.
- Do not over-inflate the tires, as this may lead to damage in the event of impact and, in extreme conditions, the tire rim may be deformed or the tire may burst.

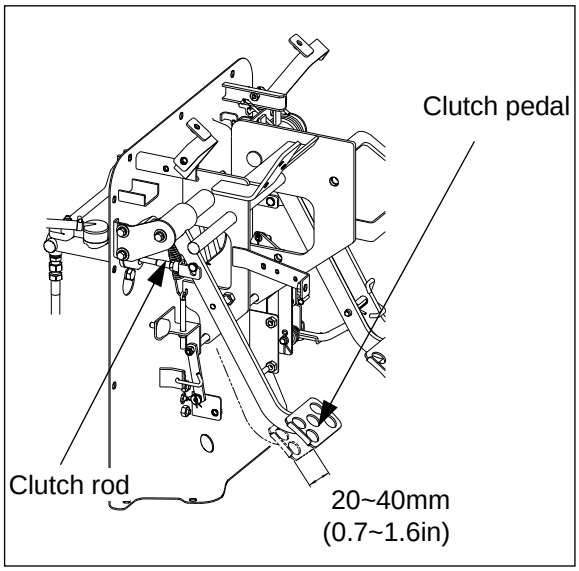
⚠ Caution	▶ It is not allowed to remove/attach or change the tire arbitrarily. Carry out the work in the tire repair center equipped with a expert and special safety tools. ▶ When checking tire pressures, keep the body away from the valve mechanism or cap. ▶ The tire pressures vary depending on the load weighing on the axles.

② Standard air pressure *- See section 4-4-(6), "Tires and Load capacity" in this manual.*

(9) Tightening state of Bolts and Nuts of each part

- Check if the bolt or nut of each part is loosened and If loosened, tighten it again.
- Check the bolts and nuts of tires before starting engine.

(10) Adjustment of Clutch pedal play



① Syncro-shuttle (Mechanical)

- **Normal distance : 20~40mm (0.7~1.6 in.)**
  if the pedal play distance is over **40mm (1.6 in.),** adjust it as below.

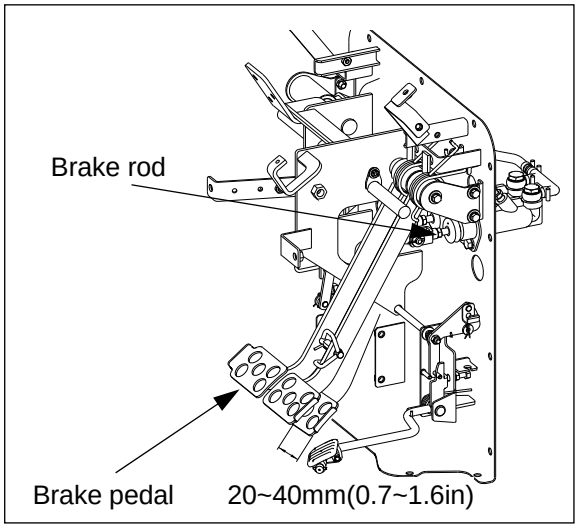
1. Loosen locking nut and turn clutch rod to adjust.
2. If clutch rod is tightened, the pedal play shall be increased and if clutch rod is loosened, it shall be reduced.
3. Pay attention that clutch rod does NOT push the piston of clutch master cylinder when clutch pedal is released.
4. After adjusting the pedal play, tighten the locking nut.
5. Check if the clutch is disengaged completely.

- If you need more adjustment for clutch pedal play, check the oil level and bleed air from the clutch pedal oil line. *(See page 5-28)*

② Power shuttle (PSS)

- In case of power shuttle version, A sensor i.e. potentiometer which controls power shuttle clutch pack is attached on the clutch pedal linkage system.
  If this linkage system is changed or modified arbitrary, It may cause a serious fault or malfunction to the power shuttle clutch pack.
- The air-bleeding of the power shuttle clutch pedal system is NOT needed.
- If you need any service for power shuttle system, do not hesitate to contact your authorized dealer for check.

(11) Adjustment of Brake pedal play



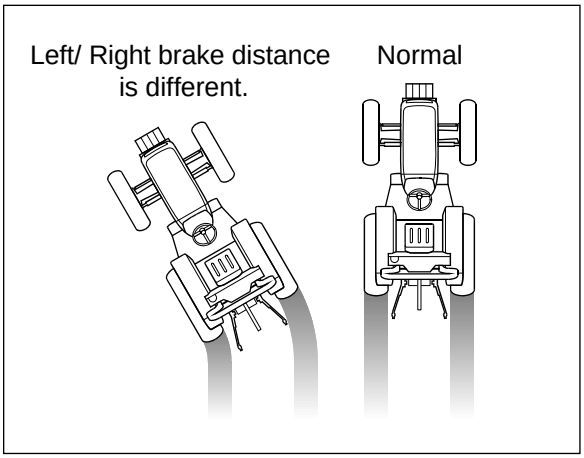
- **Normal distance : 20~40mm. (0.7~1.6 in.)**

  If the pedal play distance is over **40mm (1.6 in.),** adjust it as below.

1. Loosen the locking nut and turn brake rod to adjust.
2. If brake rod is tightened, the pedal play shall be increased and if brake rod is loosened, it shall be reduced.
3. Pay attention that brake rod does NOT push the piston of brake master cylinder when brake pedal is released.
4. After adjusting the pedal play, tighten the locking nut.
5. Check if the brake distance of the left and right brake is same as below.

- Checking the brake distance

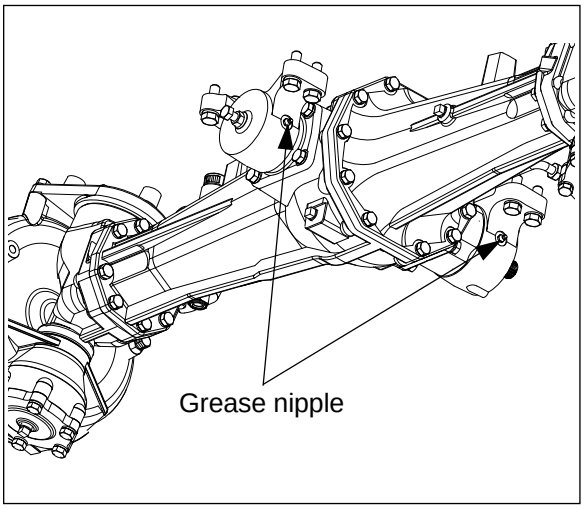
1. Connect left and right brake pedal using connecting pin.
2. Check the skid mark of the tire or stability of the tractor while driving at a suitable speed.
3. If the brake distance is different as shown in the right figure, adjust the pedal play again.

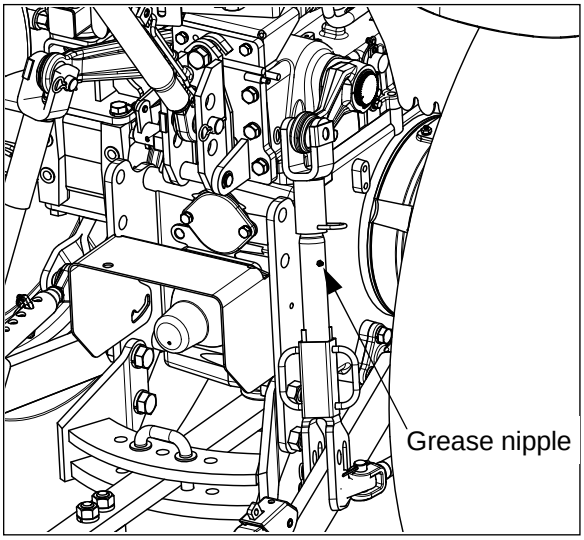


5-7. Every 50 hour check

(1) Lubricating grease nipple

- Front axle holder
- 3-point linkage



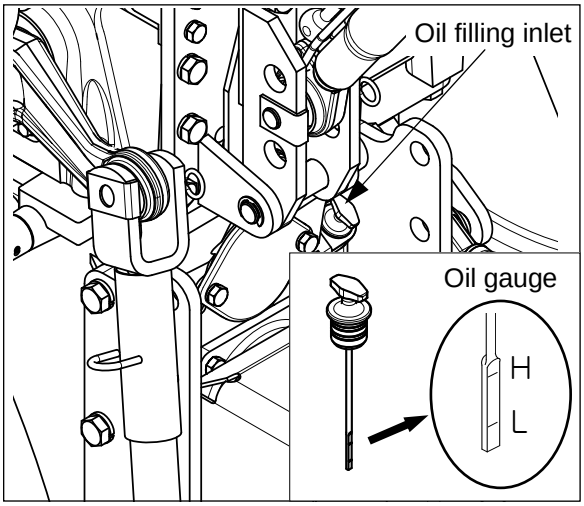


(2) Cleaning Radiator and Radiator screen

- *(See page 5-11)*

(3) Checking Transmission oil

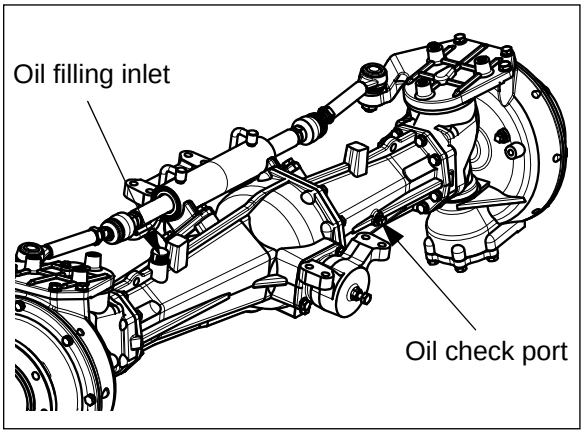
- Stop the tractor on level surface and apply the Parking brake and lower implements to the ground.
- Clean around oil filling inlet and pull the gauge straight out.
- If oil level is between “Min” and “Max” of oil gauge, it means ‘Proper amount’.
- For oil specification, refer to “Lubricants and Capacity” at the end of this manual. *(or See page 5-4)*



⚠ Caution	▶ The contaminated oil may reduce the durability of transmission and cause the failure of hydraulic system. Clean around oil filling inlet and then open the cap.

(4) Checking Front axle oil

- Open the oil check port plug and be sure to check if the oil flows out.
- If necessary, add new oil into the oil filling inlet. (after 5~10 minutes later, check the oil level again)
- For oil specification, refer to “Lubricants and Capacity” at the end of this manual or s*ee page 5-4*.



(5) Battery check

- Refer to “Batter handling and Notices” *(See page 5-31)*

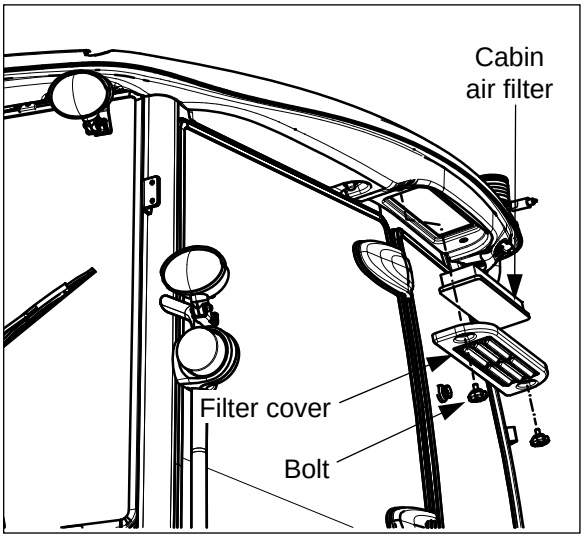
(6) Air cleaner (Dry type)

- *(See page 5-10)*

(7) Hydraulic hoses and Leakage

- Stop the engine and place all the transmission gears in neutral and lower down the implement to the ground.
- Periodically check hydraulic system for leaks or damaged parts - kinked, crushed, flattened, hard blistered, heat cracked, charred, twisted, soft or loose covered hoses and fittings.
- Before removing hydraulic components, make sure to check that hydraulic pressure is relieved completely. The leaks of pressurized oil can cause a fatal physical injury. *For further information, see section, “3-4. Hydraulic system” in this manual.*

(8) Cleaning Cabin air filters



- Before servicing the filters, switch off the blower and close all cabin doors and windows.
- Unscrew the bolts under the roof and remove the cover and filter element as shown in the right figure.
- Clean the elements by blowing with compressed air not exceeding 30psi (2bar). Blow the dust from the upper surface through the element to the underside. Hold the nozzle at least 12 in. (300mm) from the element to prevent damage to the filter media.
- Clean all filter chambers with a damp, lint-free cloth. Re-install the filter elements.
- Re-install the filter cover and tighten the bolts.

Notice	▶ The filters are made of specially treated media with a rubber sealing strip bonded around the sides. Take care not to damage the element during installation.

5-8. Every 300 hour check

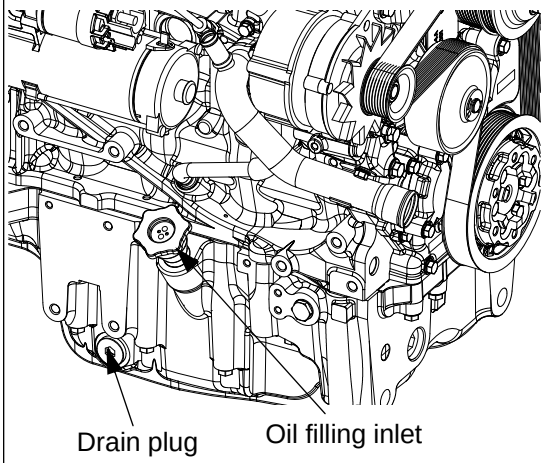
(1) Replacing Engine oil and Filter

① Drain Engine oil

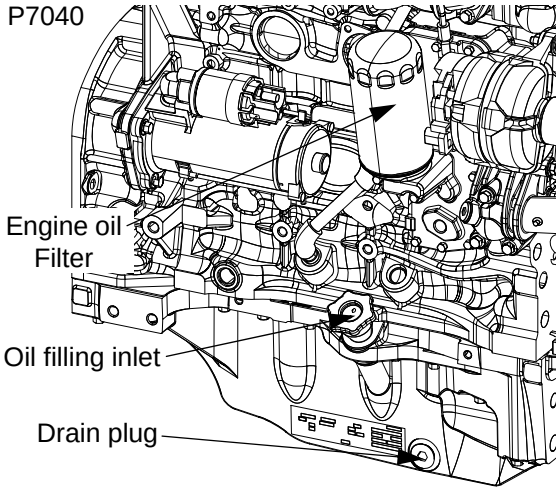
- Run engine for a few minutes to warm oil
- Park the tractor on a level surface.
- Remove drain plug of oil pan and drain the oil completely.

Notice	▶ When engine oil is warm, the impurities can be drained completely.

P7010 / P7020 / P7030



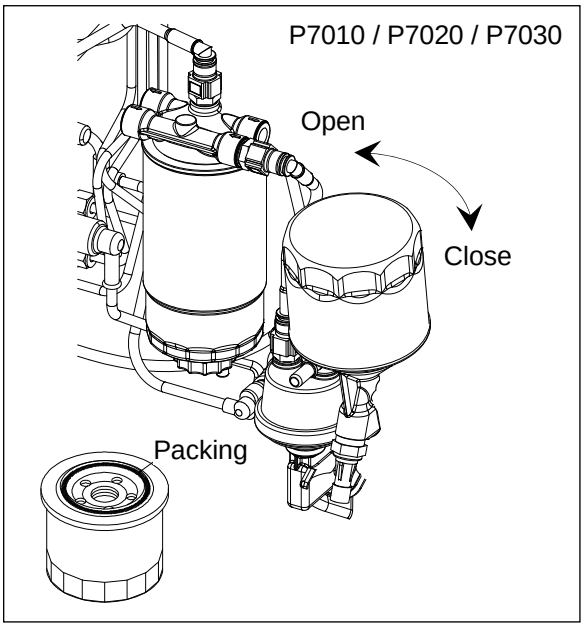
P7040



② Replace Engine oil filter

- Clean carefully around the filter.
- Coat clean engine oil on the packing of new filter and check the packing is placed well in the groove.
- Turn the oil filter counter-clockwise to remove with filter wrench.
- Turn the new filter clockwise to assemble until the packing makes contact with the mounting surface. Tighten ¾ to 1 turn more after packing contact.
- If the metal is attached to the element of oil filter to be disassembled, contact your authorized dealer.

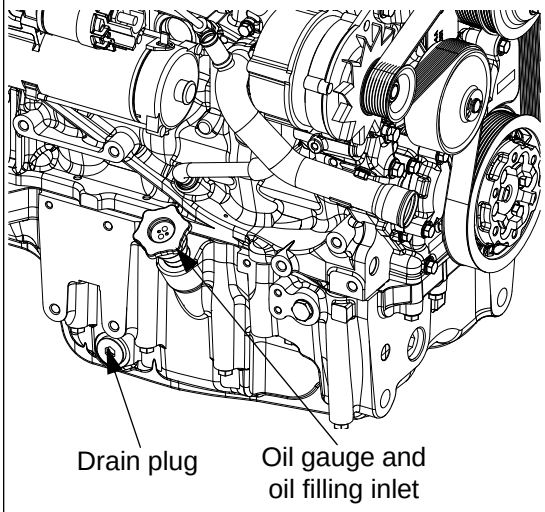
P7010 / P7020 / P7030



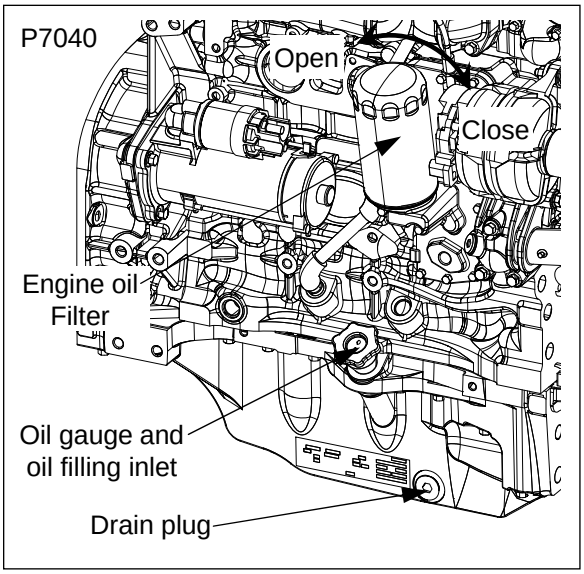
③ Fill Engine oil

- Tighten the drain plugs. (Tightening torque : 40±5 N.m) (29.5±5 lbs-ft)
- Aid engine oil as its capacity and check the oil level is between “MIN” and “MAX”.
  Engine oil capacity : 9 L (2.4 U.S.gals.)
- Check any leakage of the engine while running the engine for several minutes at idle rpm.
- Stop the engine. After several minutes later, check again the oil level is between “MIN” and “MAX”.
- Install the oil gauge.

P7010 / P7020 / P7030

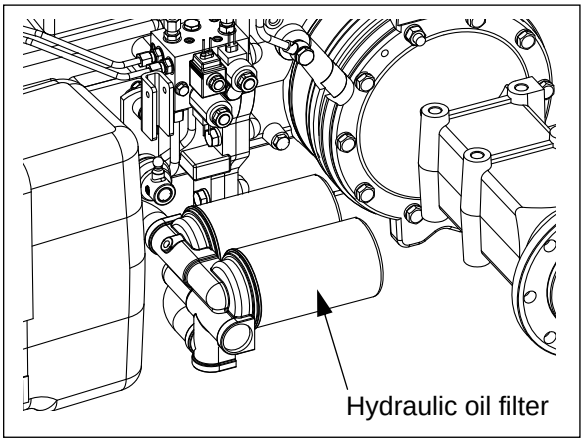


P7040



(2) Replacing Hydraulic Oil Filter

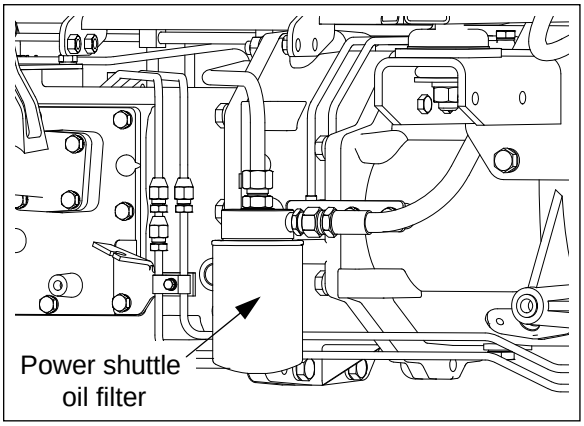
- Park tractor on level surface and apply parking brake and lower implements and stop the engine.
- Carefully clean around the filter and set a clean container under the filter.
- Coat clean hydraulic oil on the packing of new filter and check the packing is placed well in the groove.
- Turn the oil filter CCW to remove with filter wrench.
- Turn the new filter CW to assemble until the packing makes contact with the mounting surface. Tighten ¾ to 1 turn more after packing contact.
- Run the engine at idle and check any leakage.
- Check the oil level. If necessary, add new oil.



⚠ Warning	▶ If the filter or oil is very hot, it may cause serious burns. After cooling down the tractor sufficiently, replace the filter. Do not loosen the filter while engine is running.

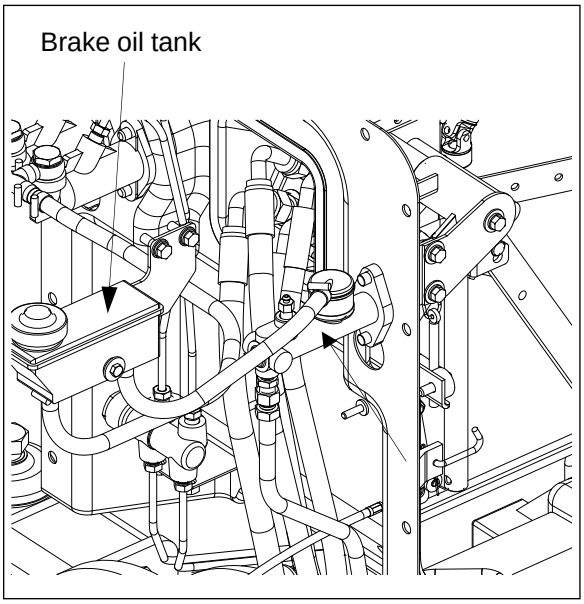
(3) Replacing Power shuttle oil filter (if fitted)

- This filter is attached under the right-hand platform of the power shuttle version.
- Replace this filter with a new one to the same as procedure of the hydraulic oil filter.



⚠ Warning	▶ If the filter or oil is very hot, it may cause serious burns. After cooling down the tractor sufficiently, replace the filter. Do not loosen the filter while engine is running.

(4) Checking Brake oil

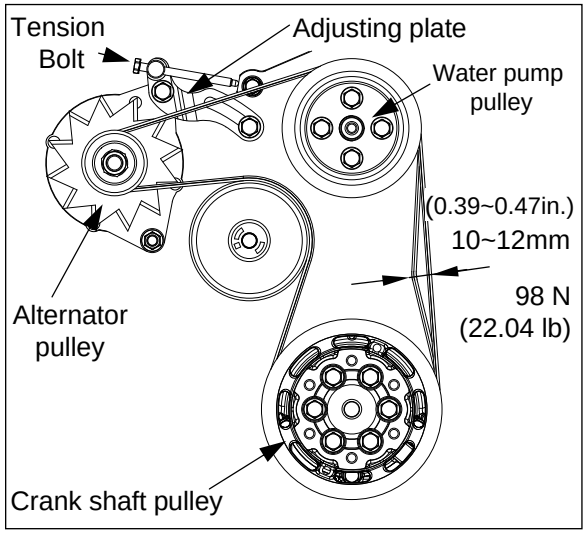


- Open the Bonnet and check if the brake oil level is between **MAX** and **MIN** marks of the oil tank.
- If necessary, add new brake oil.
- Make sure to check the specification, before adding new brake oil.
  Specification : Mineral based oil (ISO 7308)
  Recommend oil : Rando HD Z 32/46
- Oil specification may be altered depending on the atmospheric temperature and/or work condition. Contact your authorized local dealer.
- If the oil is discolored or foreign materials are mixed, change the oil and bleed the air from the brake and clutch line. If possible, contact your authorized dealer.
  Oil capacity : 0.5 L (0.1 U.S.gals.)

⚠Warning	▶ If any part of clutch or brake line is replaced or the oil is changed, execute air-bleeding. Air in the brake and clutch line can cause to serious faults of brake and clutch operation and fatal physical injury. ▶ If the specific oil is not used, even though a little amount, it can cause serious faults of clutch and brake devices. In this case, all of brake and clutch device must be serviced. Contact your authorized dealer. ▶ If engine is very hot, it may cause serious burns. After the engine is cooled down sufficiently, check the brake oil level.

(5) Tension of Fan belt

- Check the tension of fan belt. If it's not suitable to standard value, loosen the bolt and adjust the tension.
  - Belt tension : crank shaft pulley ~ water pump pulley
  - **Normal : Approx. 10~12mm (0.4~0.5in.)**
    (if pressed by 98 N (22 lb))

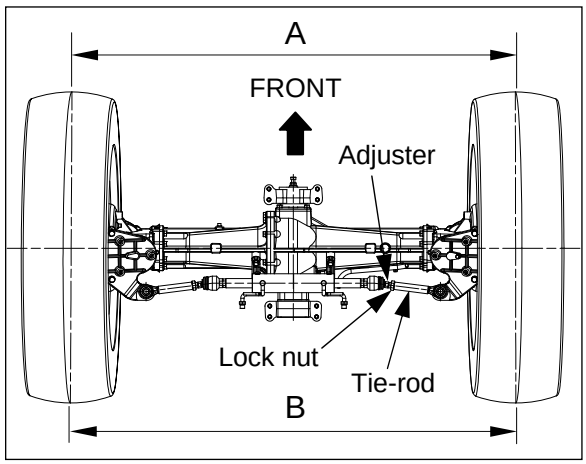


- When adjusting the tension,

1. loosen two locking bolts of alternator and bolt of adjusting plate slightly
2. Tighten or loose the tension bolt to apply the standard tension to the belt.
3. Tighten the locking bolts of alternator and adjusting plate.

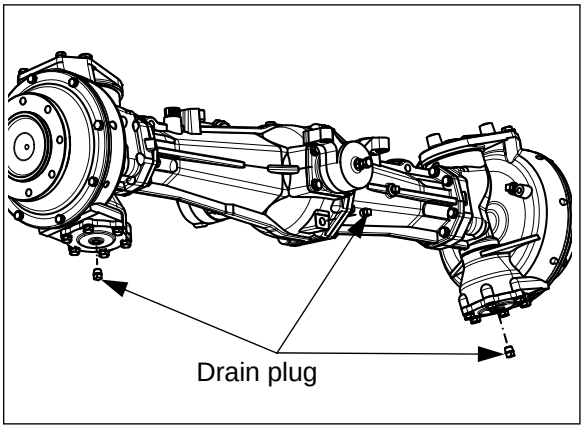
(6) Toe-in

- Check Toe-in of the front wheel and if needed, adjust it as below.
  Normal value : B – A = 0~5 mm (0~0.2 in.)
- Loosen lock nut of the tie-rod (both side).
- Fix steering cylinder and turn adjuster counter-clockwise, the toe-in ("B-A") shall be increased.
- Turn adjuster of the other side to the same displacement.
- After adjusting Toe-in, tighten the lock-nuts.
- If possible, Contact your authorized dealer.

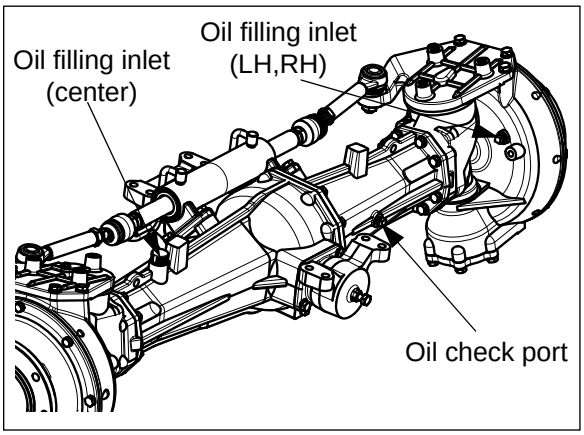


5-9. Every 600 hour check

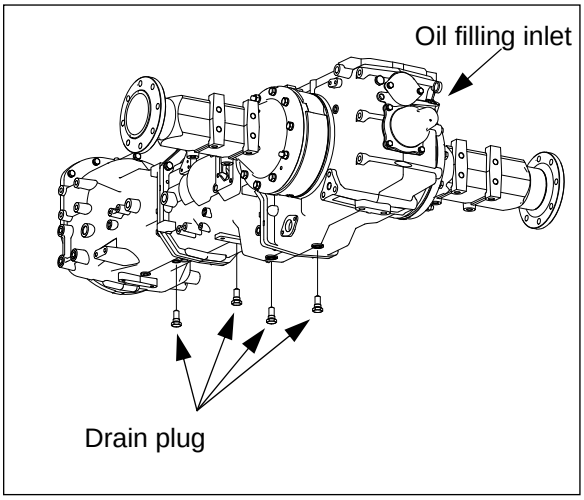
(1) Changing Front axle oil



- Stop the tractor on a level surface and apply parking brake.
- Remove all plugs for drainage, oil filling inlet and oil check port on the center/left/right housing and drain oil completely.
- Wrap the sealing tape on the plugs and tighten the drain plugs.
- Add new oil into the oil filling inlet of the center housing with checking if the oil flows out through the oil check port.
  Oil capacity : 8L (2.1 U.S gals.)
- Tighten the Oil check port plug on the center housing.
- Add new oil into the left/right housing and tighten the plugs.
  Oil capacity : 2L (0.5 U.S gals.) – each housing
  Total Oil capacity : 12 L (3.1 U.S.gals.)



(2) Changing Transmission oil

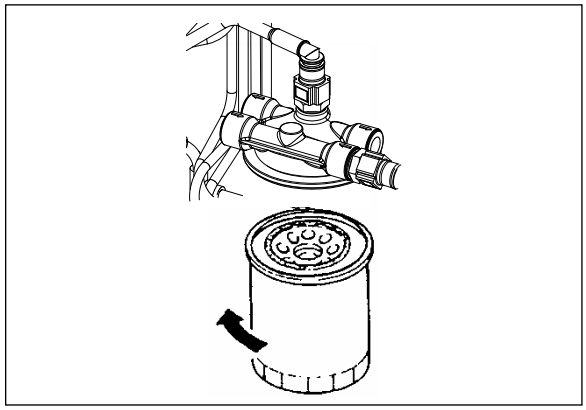


- Stop tractor on a level surface and apply parking brake. Run engine for several minutes to warm oil and lower implements and stop the engine.
- Set container under the drain plug and remove drain plug under the transmission and drain oil completely.
- Clean metal powder stuck to the drain plug and tighten drain plug again with cooper washer.
- Add new oil until the oil level is between “Min” and “Max” of the oil gauge.
  Oil capacity : 55 L (14.5 U.S.gals.)
- For oil specification, refer to “Lubricants and Capacity” at the end of this manual or s*ee page 5-4*.

⚠ Caution	▶ The contaminated oil may reduce the durability of transmission and cause the failure of hydraulic system. Clean around oil filling inlet and then open the cap.

(3) Replacing Fuel filter cartridge

1. Turn the filter counter-clockwise to remove with using a filter wrench.
2. Coat the seal of new filter with a little fuel.
3. Assemble new filter.
4. After replacing the filter, bleed the air.



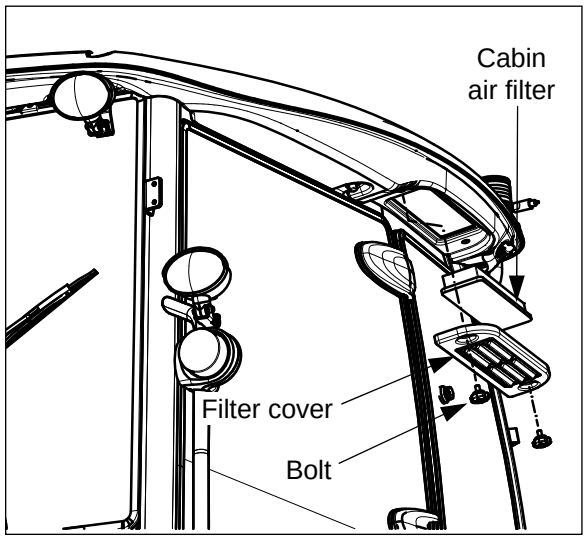
⚠Caution	▶ Do not fill the new filter with fuel. The invisible fine foreign materials enter the injection pump and it may cause damage to the fuel injection system.

(4) Checking Nozzle injection pressure

- Contact your authorized dealer for check.
  Normal injection pressure :
  P7010 / P7020 / P7030 : 26.5~27.9MPa (3844~4047 psi)
  P7040 : 24.8~27.2 MPa (3597~3945 psi)

(5) Replacing Cabin air filters

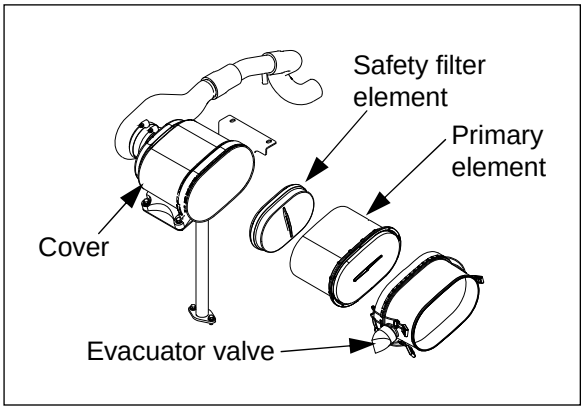
- Before servicing the filters, switch off the blower and close all cabin doors and windows.
- Unscrew the bolts under the roof and remove the cover and filter element as shown in the right figure.
- Clean both filter chambers with a damp, lint-free cloth.
- Replace the cabin air filters with a new one.
- Re-install the filter cover and tighten the bolts.



Notice	▶ The filters are made of specially treated media with a rubber sealing strip bonded around the sides. Take care not to damage the element during installation.

5-10. Every 1000 hour or 1 year check

(1) Replacing Air cleaner element (Dry type)

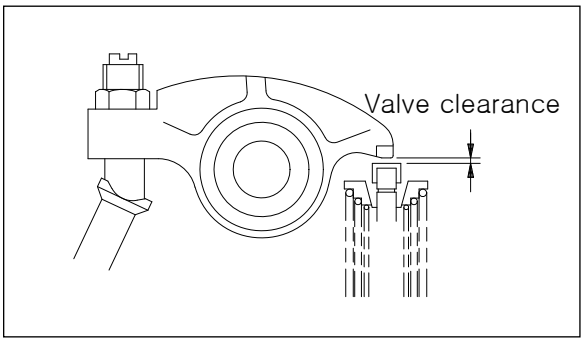


- Remove the cover and pull the primary element straight out, ensuring the safety filter element remains in place.
- Clean the inside of the air cleaner housing using a clean damp cloth, taking care not to damage the safety element.
- Check if there is damage inside filter element by using a light. If finding tiny crack or small holes in the filter element or the gasket is damaged, change it with a new one.
- Insert the filter element by pushing it deeply into the filter housing.
- Remove the dust of the evacuator valve and clean the inside of the cover.
- Assemble the cover with the evacuator valve placed downward.

Notice	▶ Do not start the engine or close the hood if the filter element is not assembled..

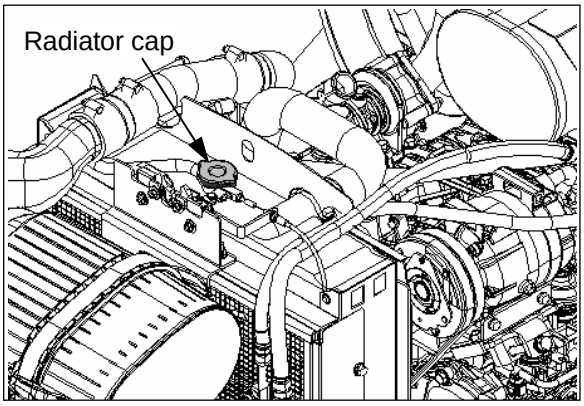
5-11. Every 1200 hour check or 2 year check

(1) Adjusting Engine valve clearance



- Contact your authorized dealer to check the valve clearance.
  Reference valve clearance :
  Intake : 0.25mm (0.01 in.)
  Exhaust : 0.50mm (0.02 in.)
  If the gap is big, the noise increase and if the gap is small, the engine power can be low.

(2) Replacement of Engine Coolant



① Capacity : 10.5 L (2.8 U.S.gals.)

② Check

- Check the coolant of radiator and expansion tank whether it is insufficient or not.
- Do not open the radiator cap except to check the coolant or change it.

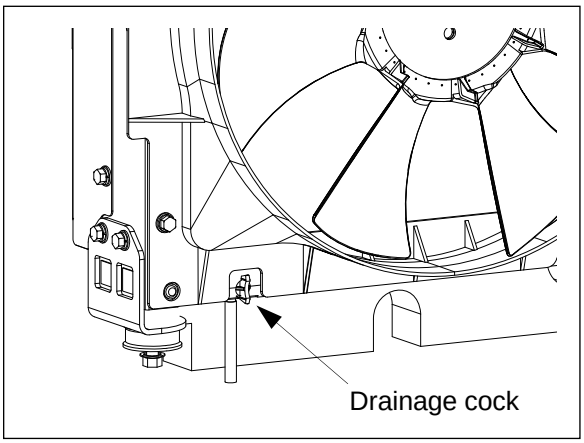
Warning	
	▶ When opening the radiator cap, be careful of the escaping hot water or steam. ▶ Cool down the engine coolant sufficiently before opening.

③ Supplement

- In case of supplement of engine coolant, use the clean soft water.
  If not, the engine coolant jacket shall be corroded or rust shall be generated.

④ Replacement

- When draining the engine coolant of engine or radiator, open the drainage cock under the radiator to drain the engine coolant.
- When supplying water, attach the overflow pipe and supply the water up to the inlet of radiator. For aux. tank, supply the proper amount of water separately.
- Anti-freeze is added to new tractor water. After passing the first winter after purchasing, change the engine coolant.



- For further information, contact your authorized dealer.
  The engine coolant cock must be opened only when the engine is cooled down.

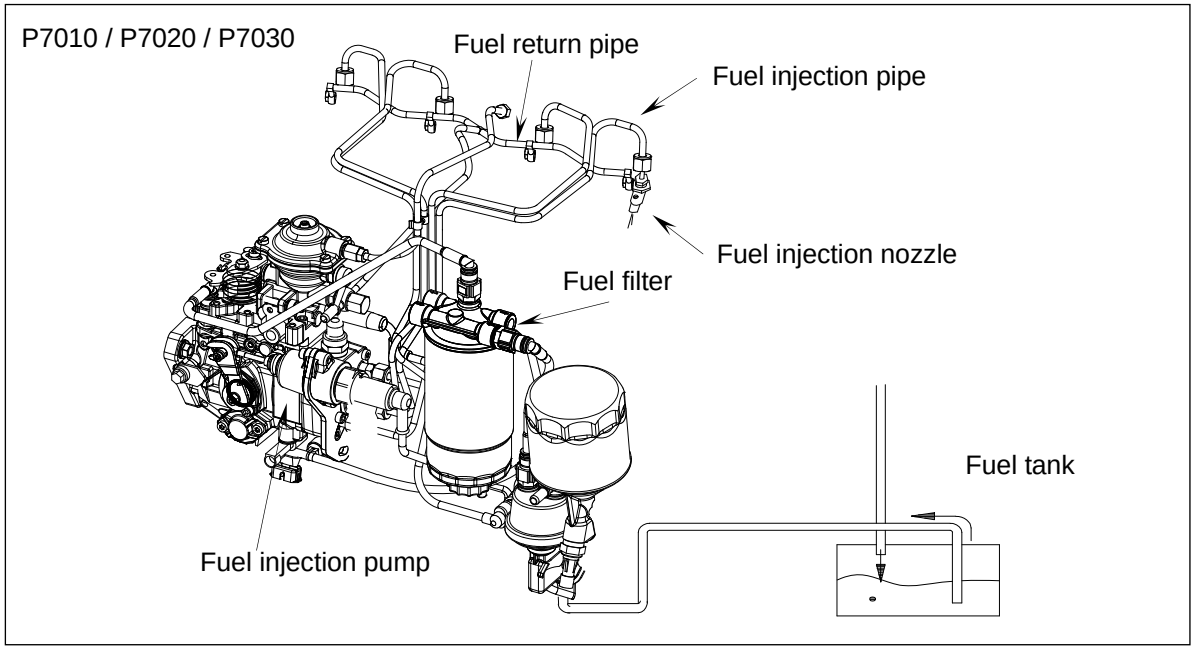
⑤ Anti-freeze

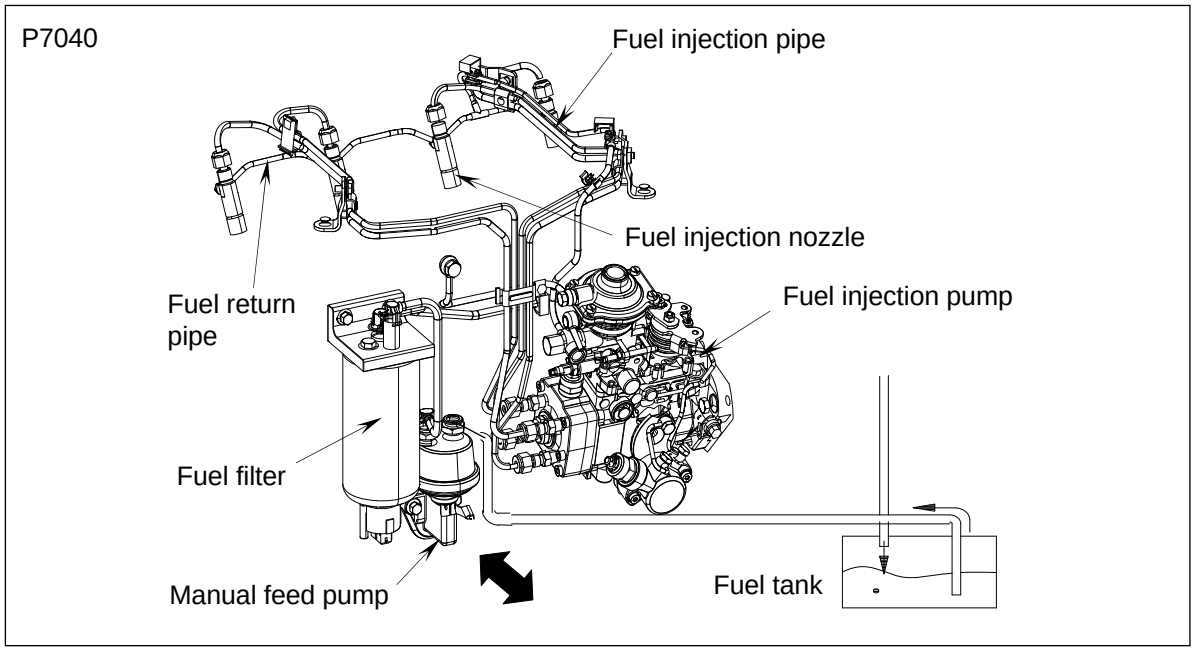
- If the density of anti-freeze in the engine coolant is low, the engine coolant may freeze and the engine or radiator may be damaged.
- Use anti-freeze always and if no anti-freeze, drain the engine coolant in the winter time. (drainage outlet :radiator – drainage cock, engine – engine coolant drain plug)
- Wash the radiator or jacket 2~3 times with clean water before adding new anti-freeze.
- The amount of anti-freeze depends on temperature, Engine coolant amount.
- Start the engine for 5 minute after injecting the anti-freeze to mix it with water well

5-12. General maintenance (When required)

(1) Air-bleeding from Fuel system

- The air in the fuel system may cause weak injection and the failure of engine start or stop. To prevent such failure, bleed the air from fuel system.

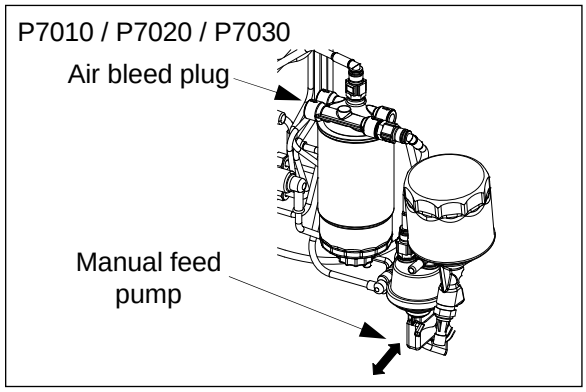




Notice	▶ When replacing fuel filter only, air-bleeding from fuel injection pipe is not necessary.

① Air-bleeding from Fuel filter

1. Loosen air bleed plug of the fuel filter flange.
2. Apply a rag to the air bleed plug and press the manual feed pump several times.
   If no bubbles from the plug, the process is completed.
3. Tighten the air bleed plug.

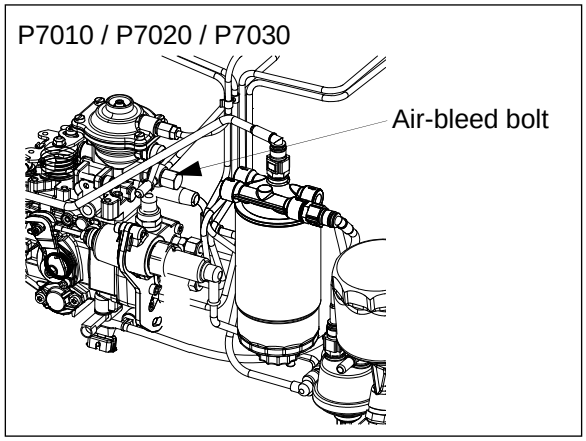


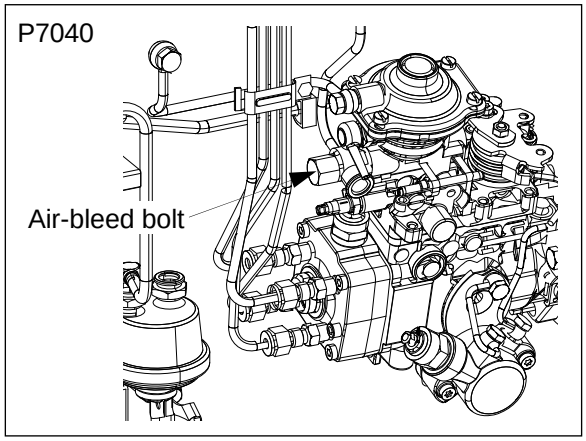
Notice	▶ If the foreign materials are stuck to the air bleed plug, it may prevent the air-bleeding. In this case, unscrew the air bleed plug and remove foreign materials by blowing.

② Air-bleeding from Fuel injection pump

1. Turn key switch to the “ON” position.
2. Loosen the air-bleed bolt by using a spanner and turn it by hands until it stops.
3. If clean fuel without bubbles comes out, turn the key switch to “OFF” position and tighten the air-bleed bolt.

Tightening torque : 20~30 N.m (14.8~22 lbs-ft)

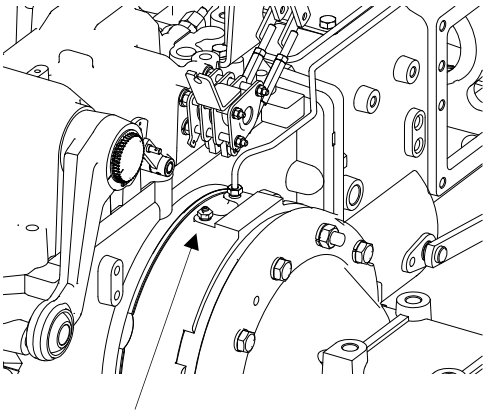




Notice	▶ Cover the bleeding fuel with a rag so that it does not flow to other components.

(2) Air-bleeding from Brake line

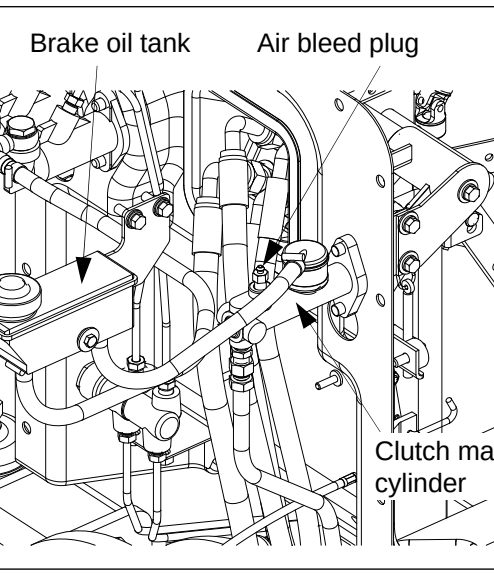
1. As the brake of tractor operates by separating into left and right, the air bleeding must be carried out separately.
2. Stop engine and apply parking brake. Open the bonnet and fill the brake oil tank with new oil (See page 5-4) sufficiently.
3. Loosen slightly the air bleed plug on the top of brake housing in the rear right side of tractor.
4. Loosen the left/right connecting pin of brake pedal and press the right pedal slowly up to max. stroke.
5. In this case, check to see if air bubbles coming out through air bleed plug. If the oil mixed with the bubble comes out, check the oil level of oil tank and repeat bleeding procedure.
6. If there is no bubbles in the oil of air bleed plug, stop pressing the pedal and lock the air bleed plug again with proper torque.
7. For the left, carry out the air bleed procedure with the same method.

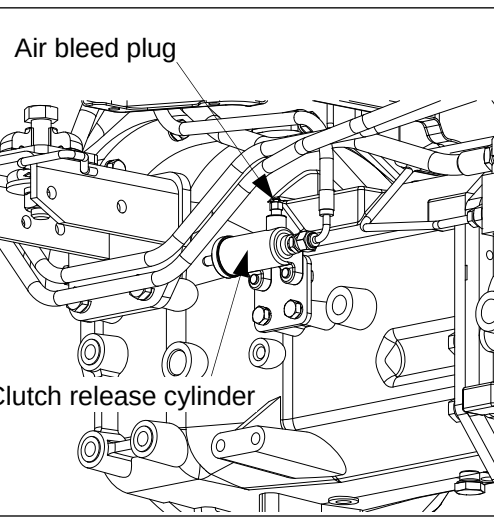


(3) Air-bleeding from Clutch line

- For hydraulic clutch, If the air is contained in the hydraulic clutch line same as hydraulic brake, the clutch may not be released completely.

1. Stop engine and apply parking brake. Fill the brake oil tank with new oil (*See page 5-4*) sufficiently.
2. Loosen the air bleed plug on top of clutch release cylinder first and carry out the air bleeding.
3. If there is no bubbles coming out through the air bleed plug, assemble the plug again with proper torque.
4. Loosen the air bleed plug on the top of clutch master cylinder and carry out the air bleeding.
5. After finishing the air bleeding procedure, assemble the air bleed plug again with proper torque and check if the clutch disengagement is complete.





(4) Fuse & Main fuse

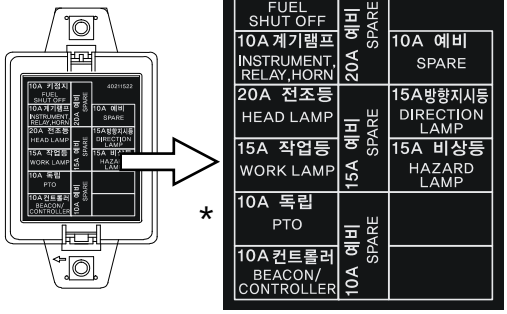
① Fuse check and replacement

- How to replace the fuse

1. Remove the cover of fuse box.
2. Check each fuse and remove the damaged fuse.
3. Replace the new one same as damaged one.

- Capacity and function of each fuse is described in the cover of fuse box.

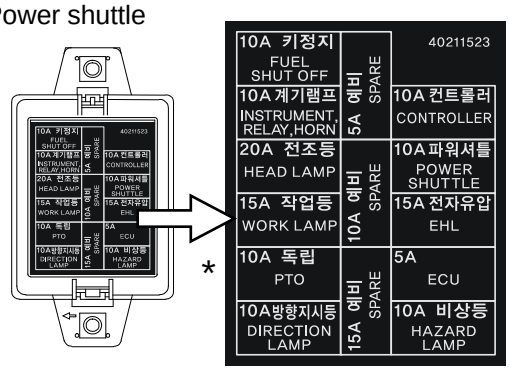
Synchro-shuttle



* IND. PTO, EHD

< Fuse box for the chassis >

Power shuttle



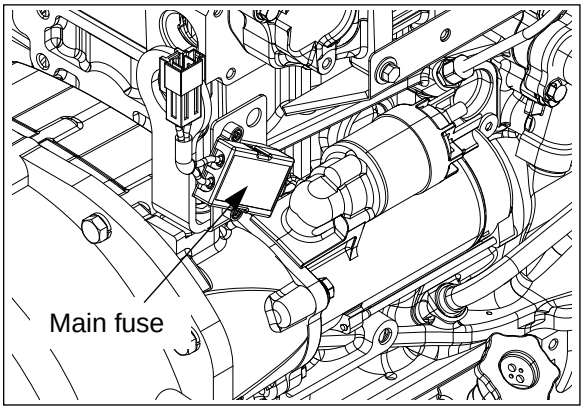
* IND. PTO, EHD

< Fuse box for the chassis >

< Fuse box in the cabin (Cabin type) >

Notice	▶ If the same function fuse is damaged repeatedly, contact your authorized dealer for check instead of using the alternatives such as wire or aluminum foil. ▶ If using the alternatives instead of the rated capacity fuse, it may cause fire which results in the damage of tractor or injury.

② Main fuse check and replacement



- Main fuse is attached to the right side of the engine.
- If the main fuse is damaged, remove cover from the fuse box and replace it with a genuine part.
  Rated capacity : 60 A
- As the main fuse is a device to protect electric system and wirings, if damaged, check if there is a trouble in the electric system. Contact your authorized dealer for check.

Notice	▶ If the main fuse is burn out often, contact your authorized dealer to check the problem. ▶ Do not use alternatives instead of the genuine fuse. And, do not connect electric wire to the battery terminals directly. It may cause of the fire and serious injury.

(5) Battery handling and Notices

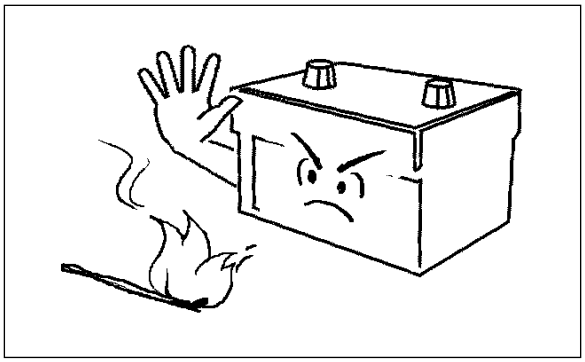
※ **Battery fluid (Electrolyte) is a solution of water and sulfuric acid. It makes poisonous gas which is very harmful to eyes, skin and clothing. And also this gas is explosive. Read the following instructions thoroughly before handling the battery.**

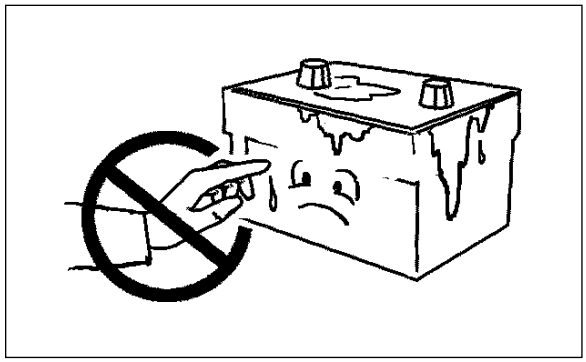
① Battery check

● Indicator on the top of the battery displays the battery state. If the indicator color is;

- **GREEN** : Normal state.
  If the engine does not start despite of green color, contact your authorized dealer.
- **CLEAN** : Low charging state – charge the battery.
- **WHITE or RED** : replace the battery with a new one after checking the vehicle.

● If the terminals of battery harness are loosened, tighten it completely.
If the terminals of battery are corroded, clean it with warm water and apply grease.

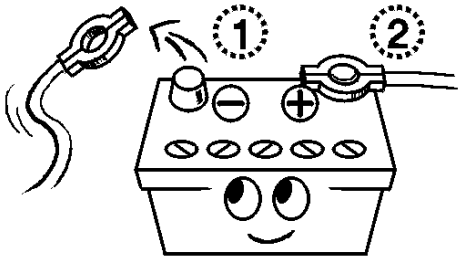




Caution	
	▶ The gas generated from the battery is explosive. comply with following instructions. - Keep cigarettes, sparks and flames away from battery. Use a flashlight to check battery electrolyte level or indicator. - Never check battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer. -Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause explosion by spark.
	▶ Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and can cause blindness if splashed into eyes. - Never disassemble the battery. - Do not touch the battery or liquid by bare hand without gloves or any protection. - Flush eyes with clean water for about 20 minutes If the electrolyte is splashed into the eyes. Get medical attention immediately.
	▶ Charge the battery in an area with good ventilation and DO NOT charge a frozen battery. ▶ Replace it with LS tractor genuine products or the battery with the same capacity.

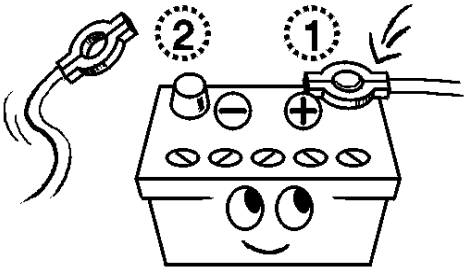
② Notices in attaching/detaching the battery

- When detaching battery, remove the negative(-) terminal from the battery first.
  If not, when metal object is contacted between positive(+) terminal and the body, it may cause the dangerous spark.



< When detaching >

- When attaching the battery, the positive (+) terminal must be attached first and the negative (-) terminal must be connected last.



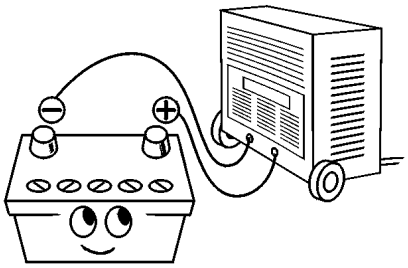
< When attaching >

Caution	▶ Stop engine and apply parking brake and remove the ignition key before replacing the battery.
	▶ Put on eye protection and globes to protect human body from poisonous sulfuric acid before handling the battery .
	▶ Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause an explosion by spark.
	▶ Keep all flames and sparks away and DO NOT smoke while you charge the battery.
	▶ Replaced old battery must be disposed of in a suitable manner, according to the national legislation or local regulations. Contact your authorized dealer.
	▶ Replace it with LS tractor genuine products or the battery with the same capacity.

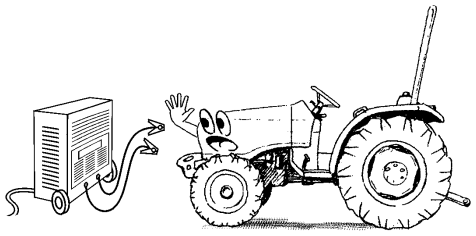
③ Notices in charging the battery using separate charger

- As the battery fluid makes poisonous gas which can explode during the charging, comply with the following instructions.

1. Detach battery from the tractor.
2. Wait until the battery is warmed to room temperature.
3. Connect the cable of charger to the (+), (-) terminal of the battery correctly.
   - Connect (+) charger cable to (+) battery terminal. : Red color
   - Connect (–) charger cable to (–) battery terminal. : Black color
4. Plug in charger cord.
5. Charge battery with a “SLOW CHARGE”.
6. Check the charging current and temperature of electrolyte during the charging.
7. Unplug charge cord and remove charger cables.
8. Attach battery to the tractor.



< when connecting the charger >



< Do not charge the attached battery>

Caution	▶ Put on eye protection and globes to protect human body from poisonous sulfuric acid before handling the battery .
	▶ Always remove grounded (-) battery clamp first and assemble it last. If not, It can cause explosion by spark. ▶ Keep all flames and sparks away and DO NOT smoke while you charge battery.
	▶ Detach battery from the tractor before charging. DO NOT charge directly while the battery is attached to the tractor. ▶ Turn off or unplug the charger cord, before connecting or disconnecting the charger cable to or from the battery
	▶ Charge the battery in an area with good ventilation. ▶ Do not charge the frozen battery. ▶ Use the rated 12V-5A charger. ▶ Never check battery charge by placing a metal object across the terminals.

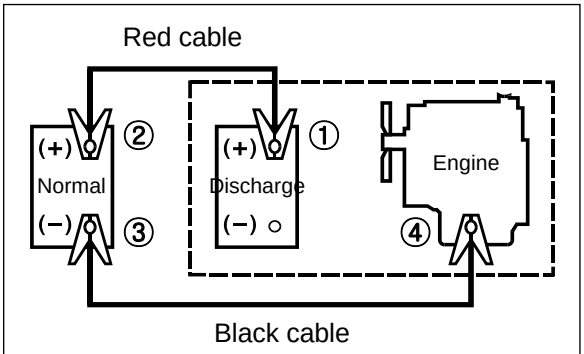
④ How to use jumper cables

※ if the battery which is attached to the tractor is discharged and needs to connect a auxiliary battery, follow the instructions as below.

ⓐ Connecting Jumper cables

- Check followings before connecting the cables.
  - is the spring of clamp normal?
  - Is the cable and clamp cut-off?

1. Stop engine, apply parking brake and remove the ignition key.
2. Connect two (+) terminals of both batteries. with red cable. (tractor battery-①, auxiliary battery-②)
3. Connect one end of black cable to (-) terminal(③) of auxiliary battery and the other end to engine block desired to start (④).
4. Start engine. If the engine does not start, check the electrolyte level of each battery.

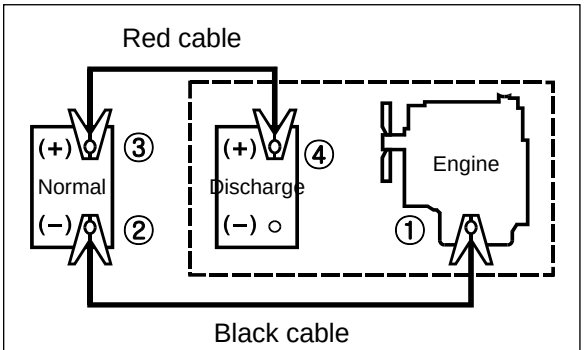


< Connecting order of jumper cables >

Caution	▶ The gas generated from the battery can be exploded by spark. DO NOT connect the negative(-) cable of auxiliary battery to the negative (-) terminal of tractor battery. Make sure to connect to the engine block. ▶ Keep all flames and sparks away and DO NOT smoke while handling the battery.

ⓑ Removing Jumper cables

- Remove jumper cables as right figure, “Removing order of jumper cables”.



< Removing order of jumper cables >

Notice	▶Pay attention not to change the (+) and (-) pole. If not, it may cause a failure of electric circuit or the damage of wire and even the polarity of battery can be changed at over-discharged state.

5-13. Troubleshooting

⚠ Warning	▶ To avoid injury due to sudden start, apply parking brake and place the transmission gear in “Neutral”.

System	Faults	Possible causes	Solutions
Engine	The start motor does not turn when turning the key switch.	▲ Start safety switch is not contacted. ▲ PTO switch is not in OFF position. ▲ Discharge of battery ▲ Terminal loosened ▲ Key switch failure ▲ Start motor failure	▲ Depress clutch pedal fully ▲ Place PTO switch in OFF position ▲ Charge or replace ▲ Tighten the terminal ▲ Repair or replace ▲ Repair or replace
	The start motor turns but the engine does not start.	▲ The battery is weak. ▲ Bad grounding ▲ Improper viscosity of engine oil ▲ Air in fuel system ▲ Fuel filter clogged ▲ Error in engine body ▲ Fuel cock closed	▲ Charge or replace ▲ Tighten the ground ▲ Replace the oil with proper viscosity. ▲ Bleed the air ▲ Clean or replace the filter ▲ Repair ▲ Open the cock
	Engine revolution is irregular.	▲ Air in fuel system ▲ Fuel filter clogged ▲ Injection nozzle clogged ▲ Fuel leakage ▲ Irregular fuel injection	▲ Bleed air ▲ Clean or replace the filter ▲ Repair or replace ▲ Repair ▲ Repair
	Engine turns more than maximum speed.	▲ impurities in governor	▲ Repair
	Engine stops suddenly during operation.	▲ Fuel shortage ▲ Fault of nozzle ▲ moving parts failure due to bad lubrication	▲ Add fuel and bleed air. ▲ Repair or replace ▲ Repair

System	Faults	Possible causes	Solutions
Engine	Engine stops at low speed revolution.	▲ Fault of injection pump ▲ Valve gap is not correct ▲ Poor nozzle pressure	▲ Repair ▲ Adjust the gap ▲ Repair
	Engine overheat	▲ Lack of coolant ▲ Bad fan belt tension or broken ▲ Dirt attached to the radiator	▲ Supplement ▲ Adjust belt tension or replace ▲ Wash
	The color of exhausted smoke is white.	▲ Air cleaner clogged ▲ Engine oil exceeded ▲ Lack of fuel supply	▲ Clean element or replace ▲ Adjust in proper level ▲ Repair
	The color of exhausted smoke is black.	▲ Bad quality of fuel ▲ Over fuel supply ▲ Fault of nozzle	▲ Use good quality fuel ▲ Repair ▲ Repair
	Engine power is low.	▲ Injection nozzle clogged ▲ Carbon piled to valve seat ▲ Bad adjustment of valve gap ▲ Bad injection timing ▲ Lack of fuel supply ▲ Air cleaner clogged	▲ Repair ▲ Repair ▲ Repair ▲ Repair ▲ Check fuel system ▲ Clean or replace
	Engine oil pressure indicator is ON during operation.	▲ Lack of engine oil ▲ Low viscosity of engine oil ▲ Pressure switch error ▲ Fault of oil pump ▲ Engine oil filter clogged	▲ Supplement ▲ Replace the proper oil viscosity ▲ Replace ▲ Repair ▲ Replace the filter
	Battery charging indicator is ON during operation	▲ Bad electrical connection ▲ Fault of alternator ▲ Fault of battery ▲ Bad fan belt tension or broken	▲ Check battery terminals, ground, and repair ▲ Repair or replace ▲ Replace ▲ Adjust belt tension or replace
Clutch	Clutch is slipped.	▲ Wrong adjustment of clutch pedal play ▲ Friction lining worn or broken	▲ Adjust the pedal play correctly ▲ Replace
	Clutch does not cut-off.	▲ Lining damaged ▲ Clutch pedal play exceeded ▲ Air in clutch line	▲ Repair or replace ▲ Adjust the pedal play ▲ Bleed air

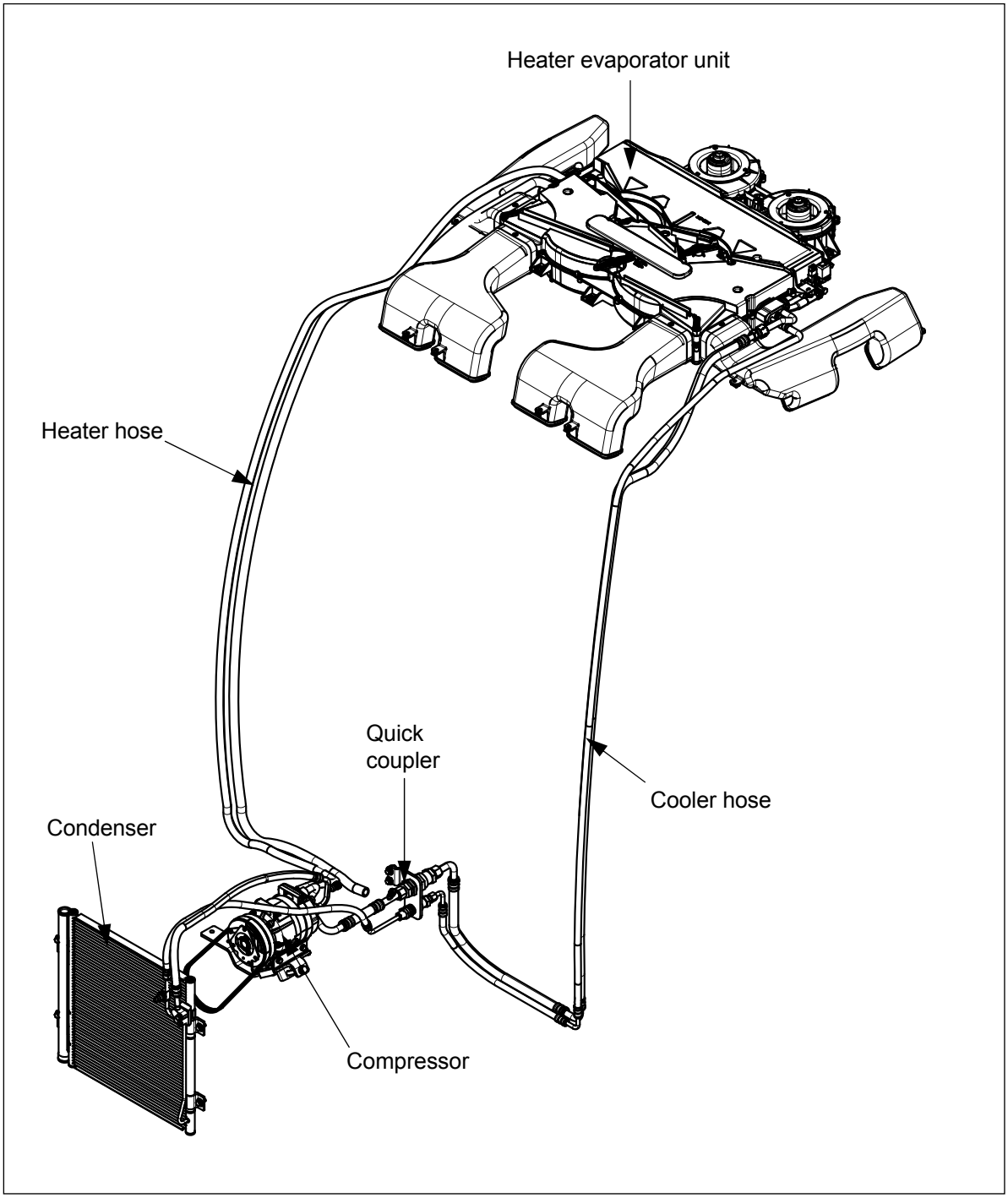
System	Faults	Possible causes	Solutions
Brake	Brake does not work or only one side works.	▲ Wrong brake pedal play. ▲ Lining worn or broken ▲ Left/right pedal play is different ▲ Air in brake line	▲ Adjust ▲ Replace ▲ Adjust ▲ Bleed air
	After brake pedal working, it does not return.	▲ Return spring damaged ▲ Lack of grease in shaft parts ▲ Master cylinder seal damaged	▲ Replace the spring ▲ Remove the rust, apply grease ▲ Replace
Hydraulic lift system	The linkage does not move up.	▲ Lack of transmission oil ▲ Air in the suction pipe ▲ Hydraulic filter clogged ▲ Hydraulic pump failure ▲ Control valve failure ▲ Cylinder or cylinder related parts broken	▲ Aid oil ▲ Tighten the filter or replace seal of connecting part ▲ Clean the filter or replace ▲ Repair or replace ▲ Repair or replace ▲ Repair or replace
	Oil leakage	▲ Connecting part loosened ▲ Oil seal damaged ▲ Pipe cracked	▲ Tighten ▲ Replace ▲ Replace
	If lever is placed on the raising position, relief valve sounds off.	▲ Upper limit of position control lever is changed	▲ Adjust the upper limit
	The linkage does not move down.	▲ Down speed control valve locked ▲ Control valve failure ▲ Cylinder damaged ▲ Lift shaft moving part damaged	▲ Turn the knob counter-clockwise ▲ Repair or replace ▲ Replace ▲ Repair or replace

System	Faults	Possible causes	Solutions
Steering System	Hydraulic steering system does not work.	▲ Pump worn or part damaged ▲ Steering unit damaged or worn ▲ Oil leakage by steering cylinder piston seal damaged or worn ▲ Oil leakage by pipe damage	▲ Repair or replace ▲ Repair or replace ▲ Repair ▲ Repair or replace
	Hard to operate the steering wheel.	▲ Steering unit - Steering unit spline and column spline does not aligned - Spool and sleeve damaged by foreign material - Excessive tightening torque of end cap bolt ▲ Pump - Low speed - Wearing, failure ▲ Relief valve - Valve spool clogged - Setting pressure too low	▲ - Check mounted condition of steering unit and column - Replace - Apply regular torque ▲ - Adjust RPM or Repair - Repair or replace ▲ - Repair or replace - Reset or adjust
	Cylinder does not work smoothly as steering wheel movement	▲ Air in steering line if not used for a long time ▲ Air in suction pipe ▲ Piston seal damaged	▲ Bleed air ▲ Repair ▲ Replace
	Steering wheel turns to the opposite direction.	▲ bad assembly of steering gear ▲ bad assembly of steering hose	▲ Repair ▲ Repair
	Oil leakage of steering pump, steering unit, cylinder and fittings	▲ Seal damaged	▲ Replace seal
	Abnormal noise	▲ Lack of oil ▲ Exceeding resistance of suction line ▲ Air in system	▲ Aid oil ▲ Replace filter ▲ Bleed air

System	Faults	Possible causes	Solutions
Electric System	Battery does not charge	▲ Abnormal wiring ▲ Alternator failure ▲ Lack of fan belt tension or broken ▲ Abnormal battery	▲ Check the tightening state of terminals and ground ▲ Repair or replace ▲ Adjust fan belt tension or replace ▲ Replace
	Headlight is dark.	▲ Battery capacity is low ▲ Bad wiring and contact	▲ Charge or replace ▲ Check and repair
	Headlight is not ON.	▲ Light bulb cut-off ▲ Fuse blown	▲ Replace ▲ Check the cause, and replace it
	Horn does not sound.	▲ Switch failure ▲ Abnormal wiring ▲ Horn failure	▲ Replace ▲ Repair ▲ Replace
	Turn signal light does not work.	▲ Light bulb cut-off ▲ Bad connection ▲ Fuse blown	▲ Replace ▲ Tighten terminals ▲ Check the cause, and replace it
	Cold start aid indicator is not ON.	▲ Relay and timer damaged ▲ Bad connection of preheat plug wiring	▲ Replace ▲ Check and tighten
	Other illuminating light or indicator is not ON.	▲ Fuse blown ▲ Light bulb cut-off	▲ Check the cause, and replace it ▲ Replace

6. Air conditioning system (Cabin type)

6-1. The name of each part of cooling and heating system

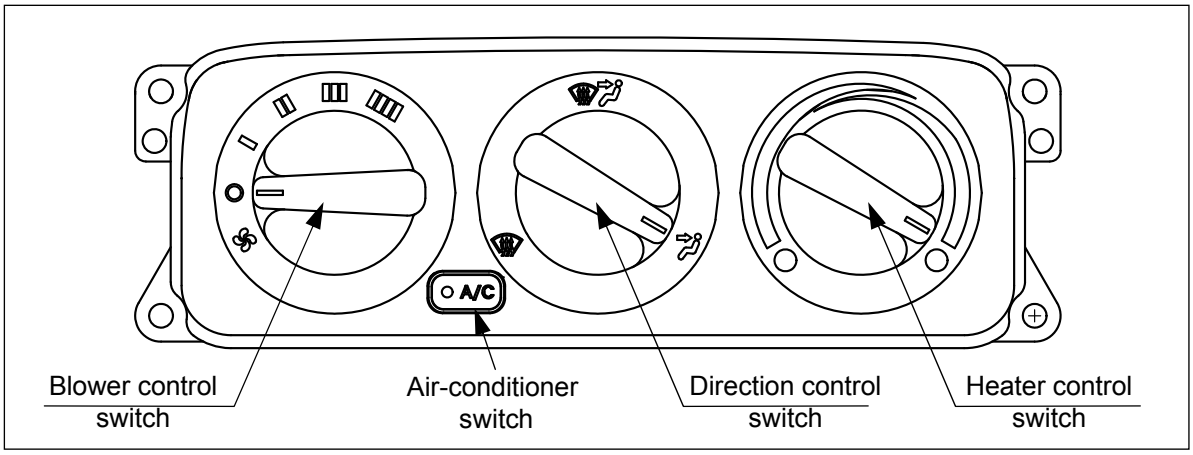


⚠Caution	▶ Maintenance of the air conditioning system components (Compressor, Condenser, Heater evaporator unit and connection parts) must be performed in the designated dealer. DO NOT disassemble the components arbitrary.

6-2. How to use Air conditioner and Heater

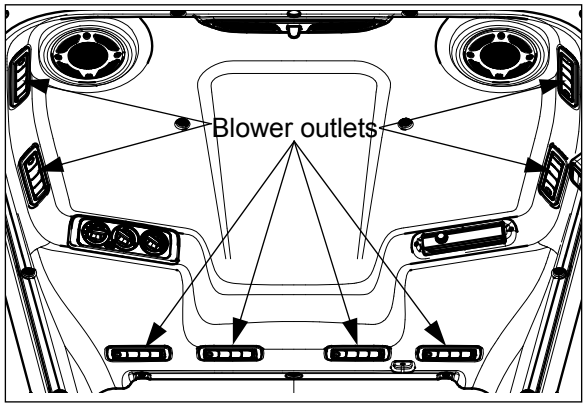
(1) How to operate air conditioner and heater

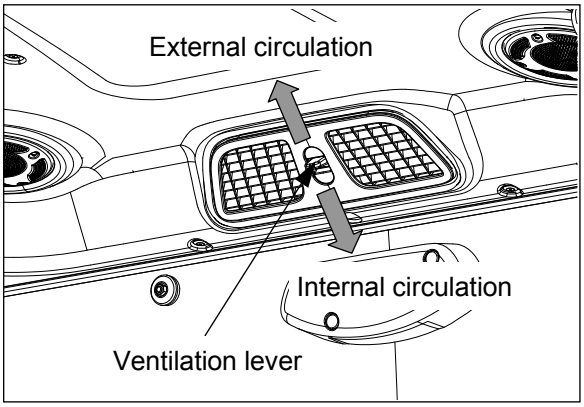
- Air conditioner switch
  - It is used to operate the air conditioner. If you press the switch button and turn the blower control switch to Ⅰ, Ⅱ, Ⅲ or Ⅳ position, the operation lamp shall be ON and the air conditioner begins to work.
- Blower control switch
  - Blower is controlled by 4 stages. If blower control switch is on “O”, air conditioner does not work.
- Heater control switch
  - It is used for selecting warm or cool air. Turn the switch clockwise (blue) for cool air, and otherwise, turn it counter-clockwise (red).



(2) Air direction control

- To control the air direction, adjust the blade angle of the blower outlets.
- For internal circulation, move the ventilation lever to the internal circulation position.
- When operating the air conditioner or heater, open the blower outlets always.





⚠ Caution	▶ Never sleep in the cabin during the air conditioner or heater running. It may cause suffocation. ▶ When operating in the cabin for a long time, ventilate air from the outside occasionally.

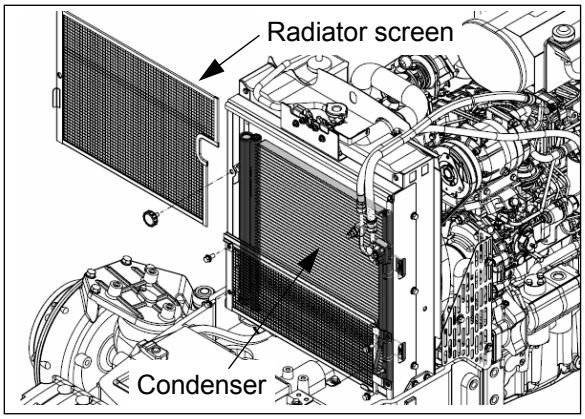
6-3. Every 6 month check

(1) Checking refrigerant amount

- Check the refrigerant amount periodically. Have to contact your authorized dealer for it.
  Refrigerant : R-134a, 850 ~ 900 g (29.98 ~ 31.74 oz)
- The components of the air conditioning system have to be handled by authorized service expert.

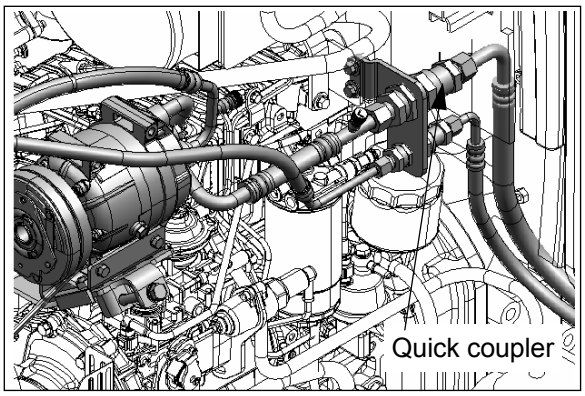
(2) Cleaning Condenser and Radiator screen

- Stop engine and allow engine to cool. Open bonnet and remove the radiator screen.
- Wash the mud or foreign materials added to the condenser and radiator screen with soft brush or low pressurized air or water.
- Pay attention that the cooling fin does not damaged. If necessary, repair the distortion of fin.



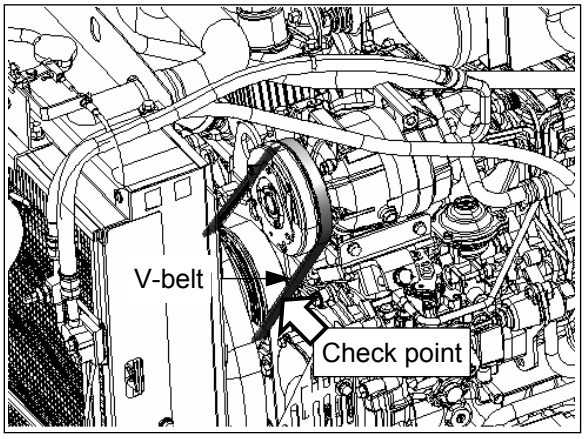
(3) Checking Leakage

- Check the tightening torque and oil leakage state of the connecting section.
- If oil spot and foreign materials is added a lot, it means that there is a leakage of refrigerant. check the refrigerant amount.



(4) Belt tension adjustment

- Check the belt tension is proper and If necessary, adjust the tension by compressor adjusting bolt.
- **Tension : approx. 10 mm (0.4 in.)**
  (when pressed by 98N (22 lbf))
- Check the damaged part of the belt and if necessary, after checking the pulley alignment, replace it by a new one.



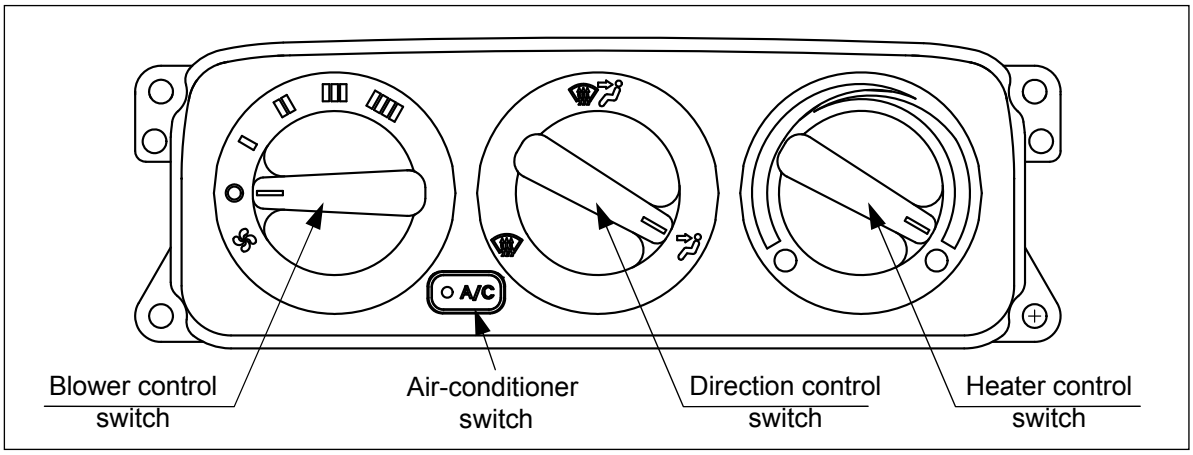
6-4. Every year check

(1) Compressor check

- Check the oil leakage on the magnet clutch in front of the compressor.
- Check the abnormal noise sounds and If necessary, contact your authorized dealer for check.

(2) Control switch check

- Check the electric switches of the control panel is normally operated.



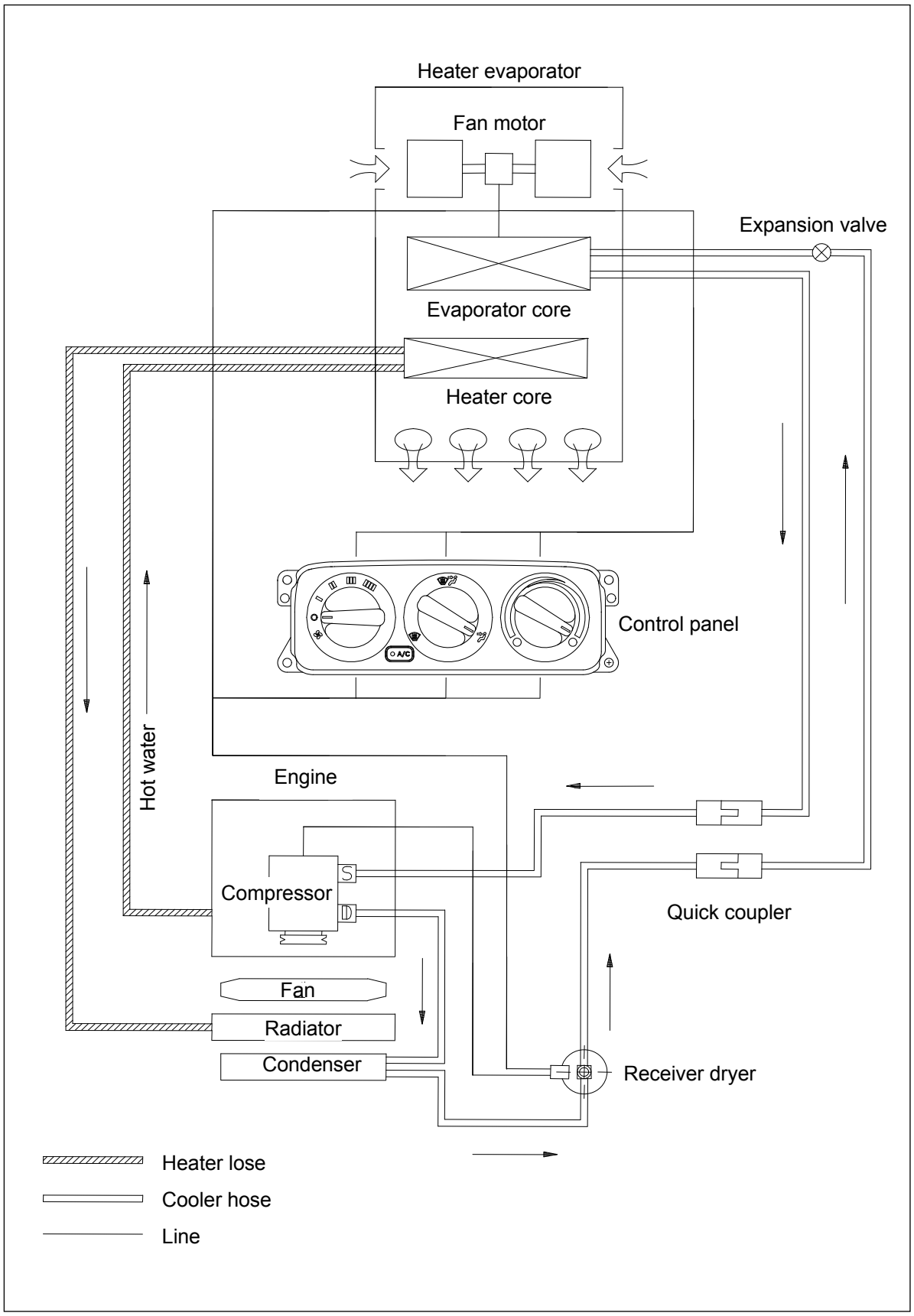
Caution	▶ If there is a trouble on air conditioning system, DO NOT disassemble the components arbitrary, contact your authorized dealer for check.

6-5. Troubleshooting

No.	Failures		Cause	Actions
1	Fan motor does not turn.		Fuse blown	Check and replace.
			Wiring cut off and poor connection.	Repair the wiring or connect right.
			Failure of fan motor.	Replace.
			Resistor, relay and switch cut off.	Replace.
2	Fan motor is normal but the air volume is small.		Evaporator or heater core was clogged.	Remove the obstacles and clean the cores.
			Duct was misaligned.	Repair the duct.
			Fan damaged or Fan motor failure.	Replace.
			Filter was clogged	Clean or replace
3	Air conditioning is insufficient despite of the normal operation of compressor and blower.	Low and high pressure is low.	Leakage of refrigerant.	Contact your dealer.
		Low and high pressure is high.	Refrigerant overcharged.	Contact your dealer.
			Condenser or radiator screen was clogged.	Clean condenser and the screen.
			Air is in air conditioning line.	Contact your dealer.
			Expansion valve does not control the refrigerant flow.	Contact your dealer.
		Low pressure is high, high pressure is low.	Compressor leakage.	Contact your dealer.
		Low pressure is vacuum intermittently.	Water is in air conditioning line.	Contact your dealer.
		Low pressure is vacuum, high pressure is low.	Receiver dryer, pipe or expansion valve is clogged.	Contact your dealer.

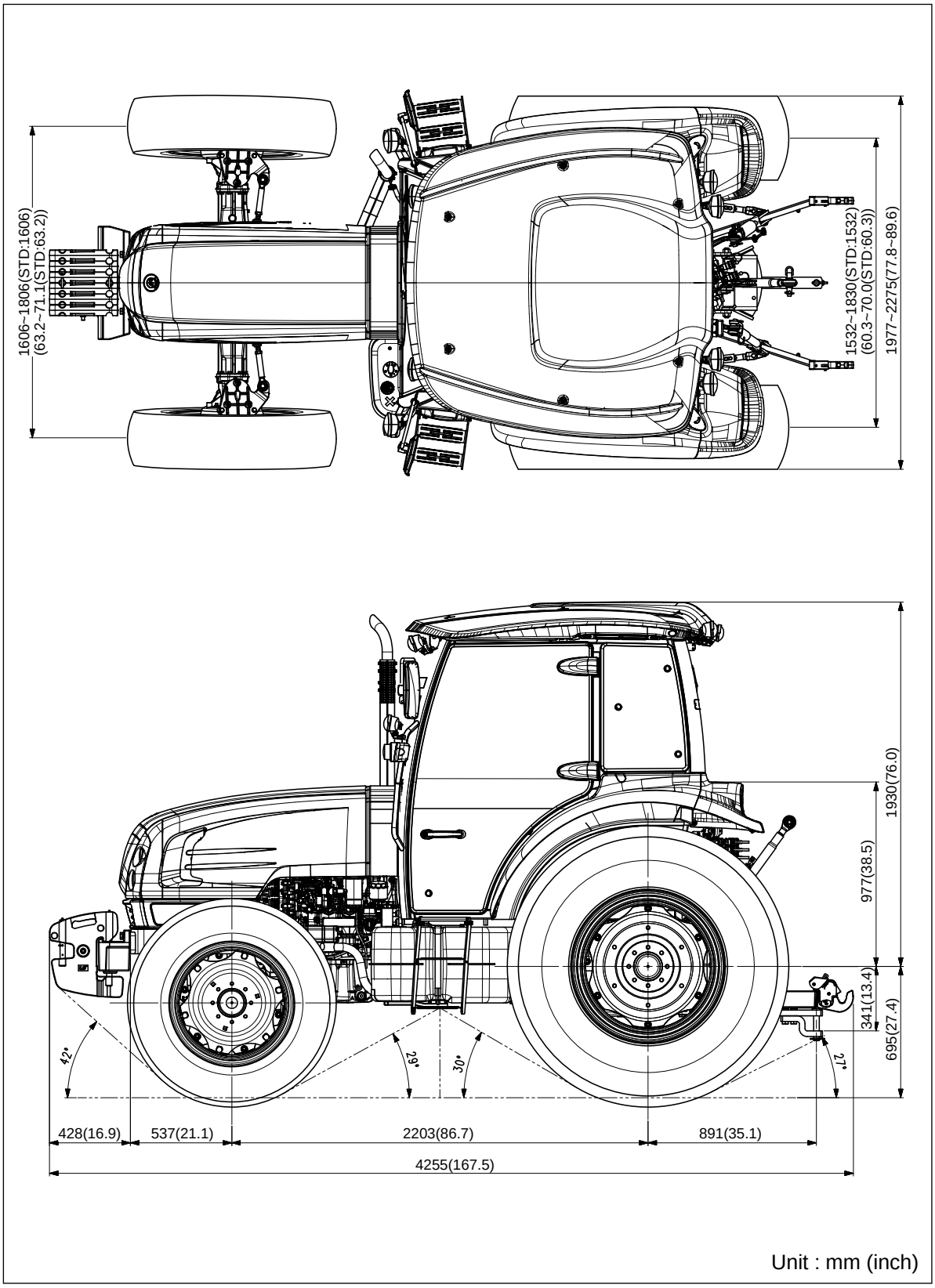
No.	Failures	Cause	Actions
4	The compressor does not turn or it is hard to revolve.	Belt loosened.	Adjust the belt tension.
		Temperature switch or pressure switch is “ON”.	Check refrigerant amount.
		Coil of magnet clutch was shorted or cut off.	Contact your dealer.
		Compressor failure.	Contact your dealer.
		Wiring cut off or poor connection such as ground.	Check and repair.
5	The warm airflow does not blow.	The amount of warm water is small.	Check and add the engine coolant.
		Heater line is clogged or distorted.	Check and repair.
		Poor operation of the thermostat of engine coolant.	Repair or replace.

6-6. System diagram



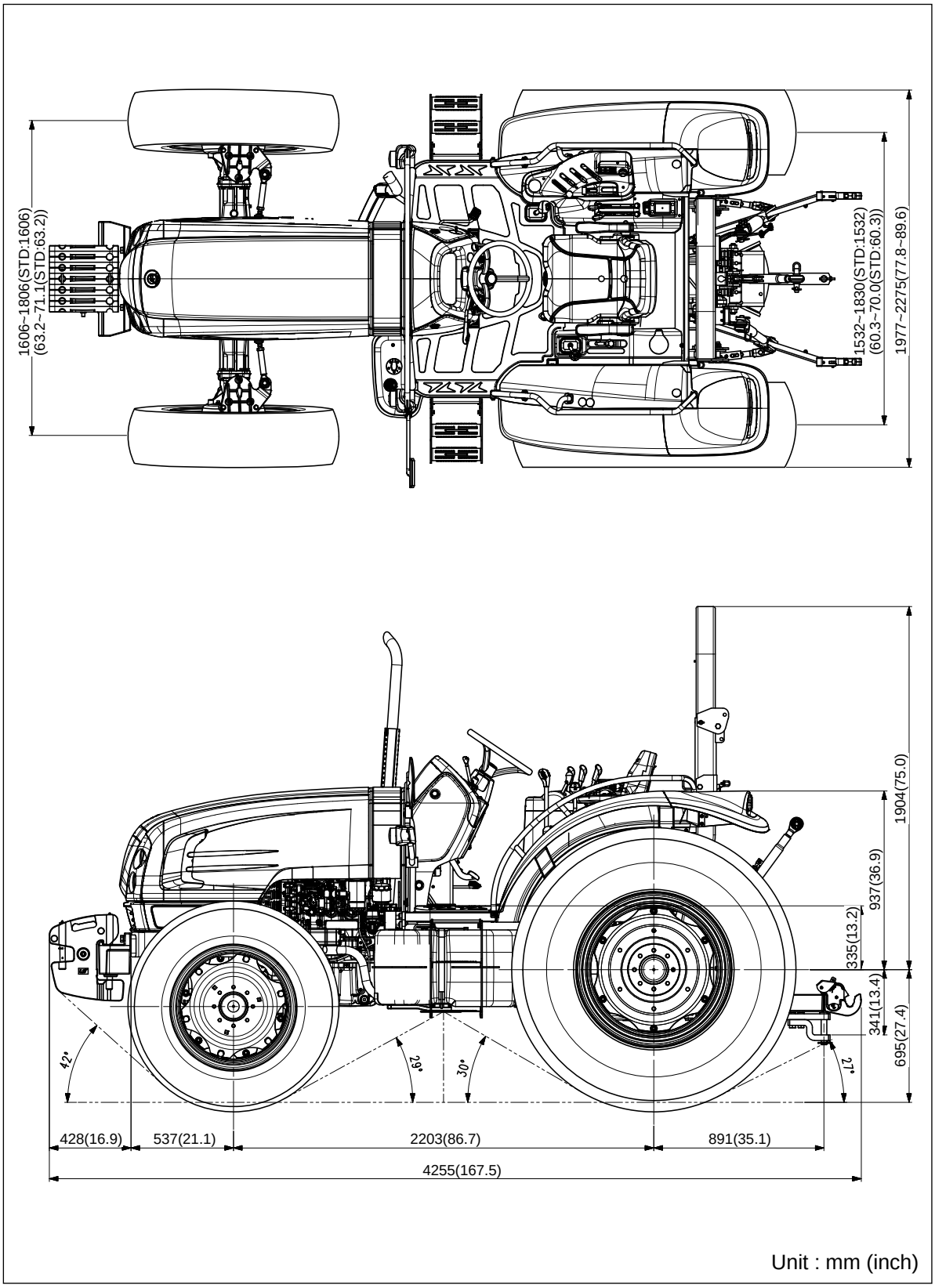
7. Dimension and Specification

(1) Cabin type – P7010, P7020



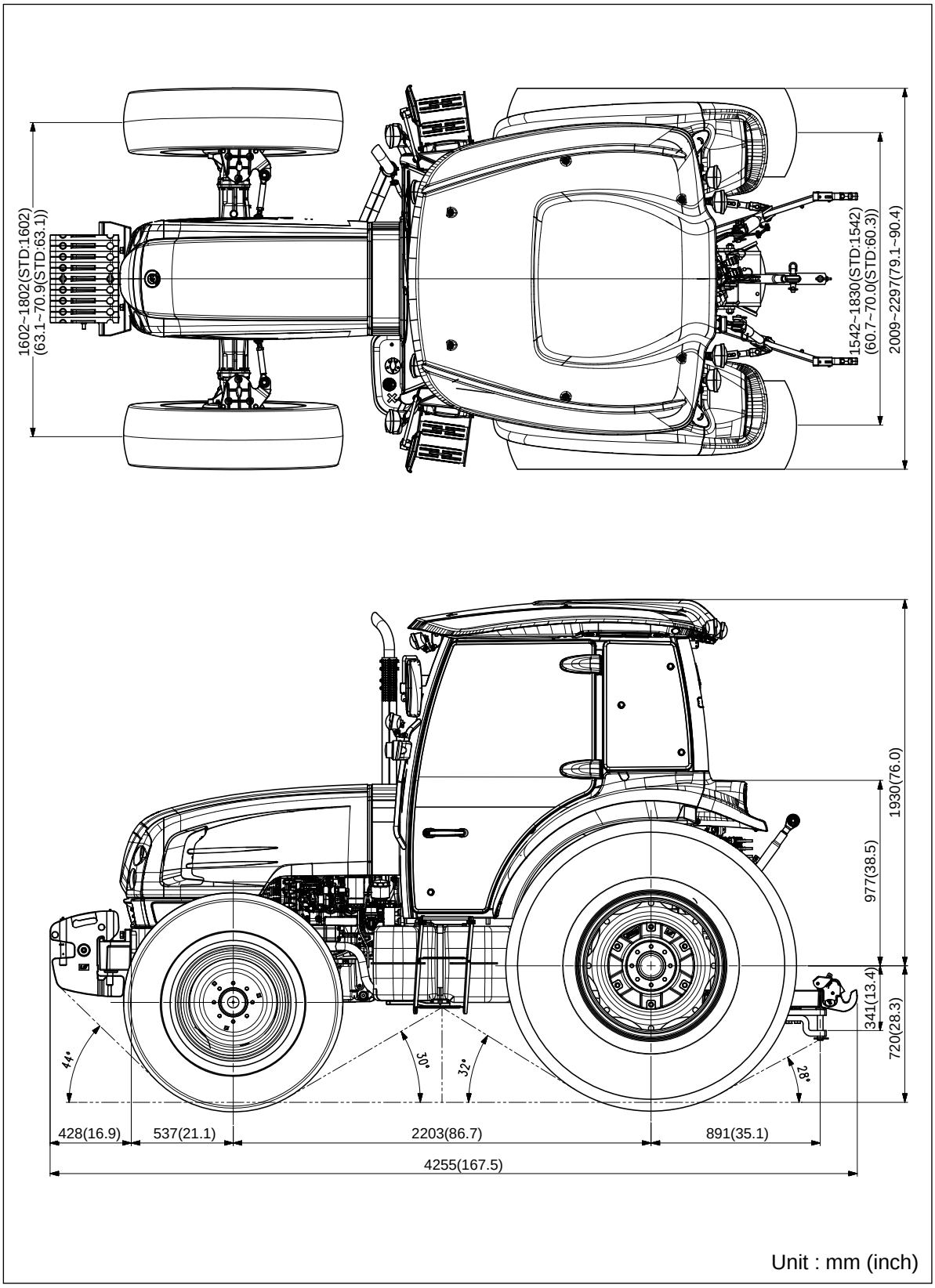
Unit : mm (inch)

(2) Frame type – P7010, P7020



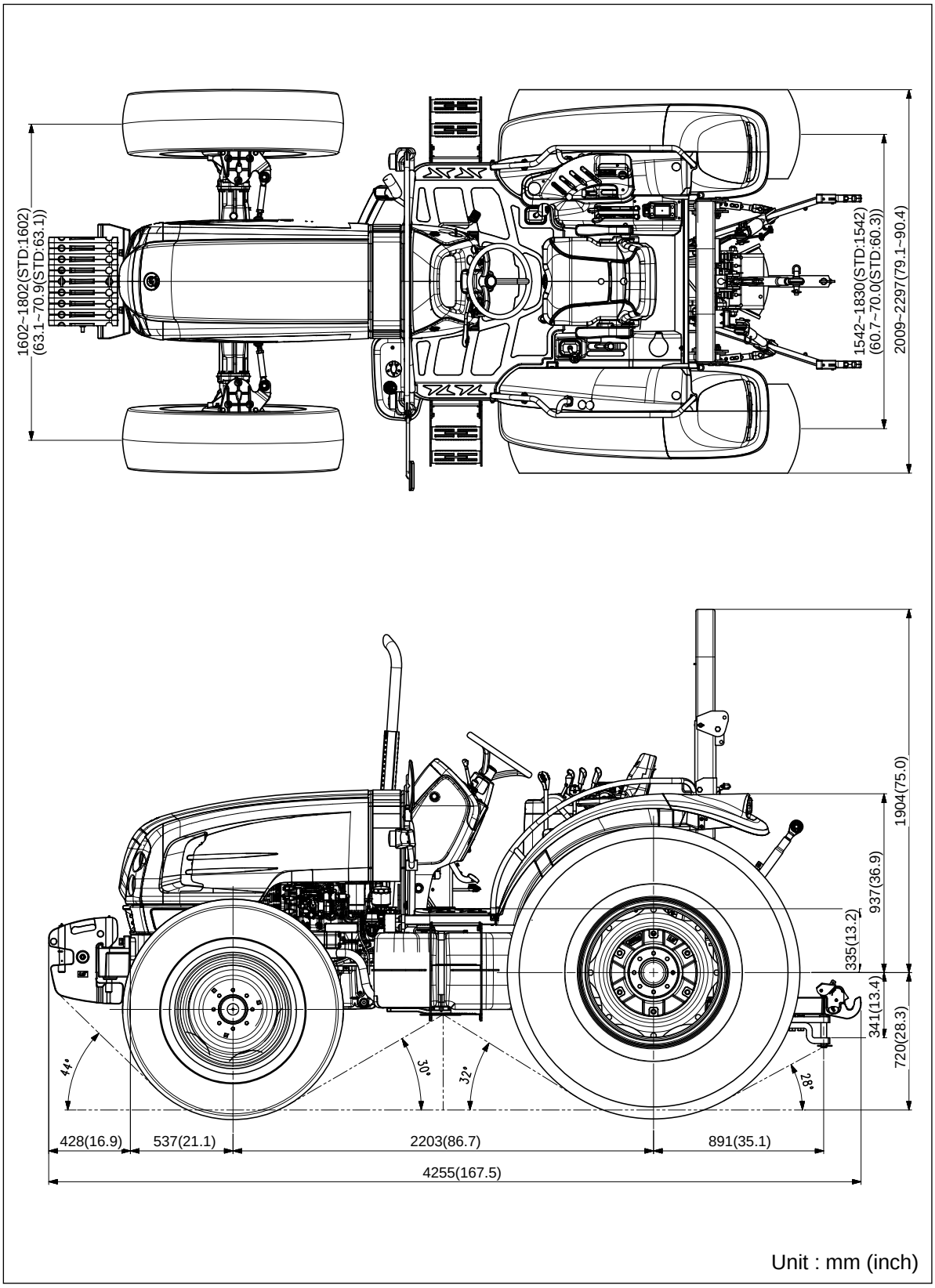
Unit : mm (inch)

(3) Cabin type – P7030



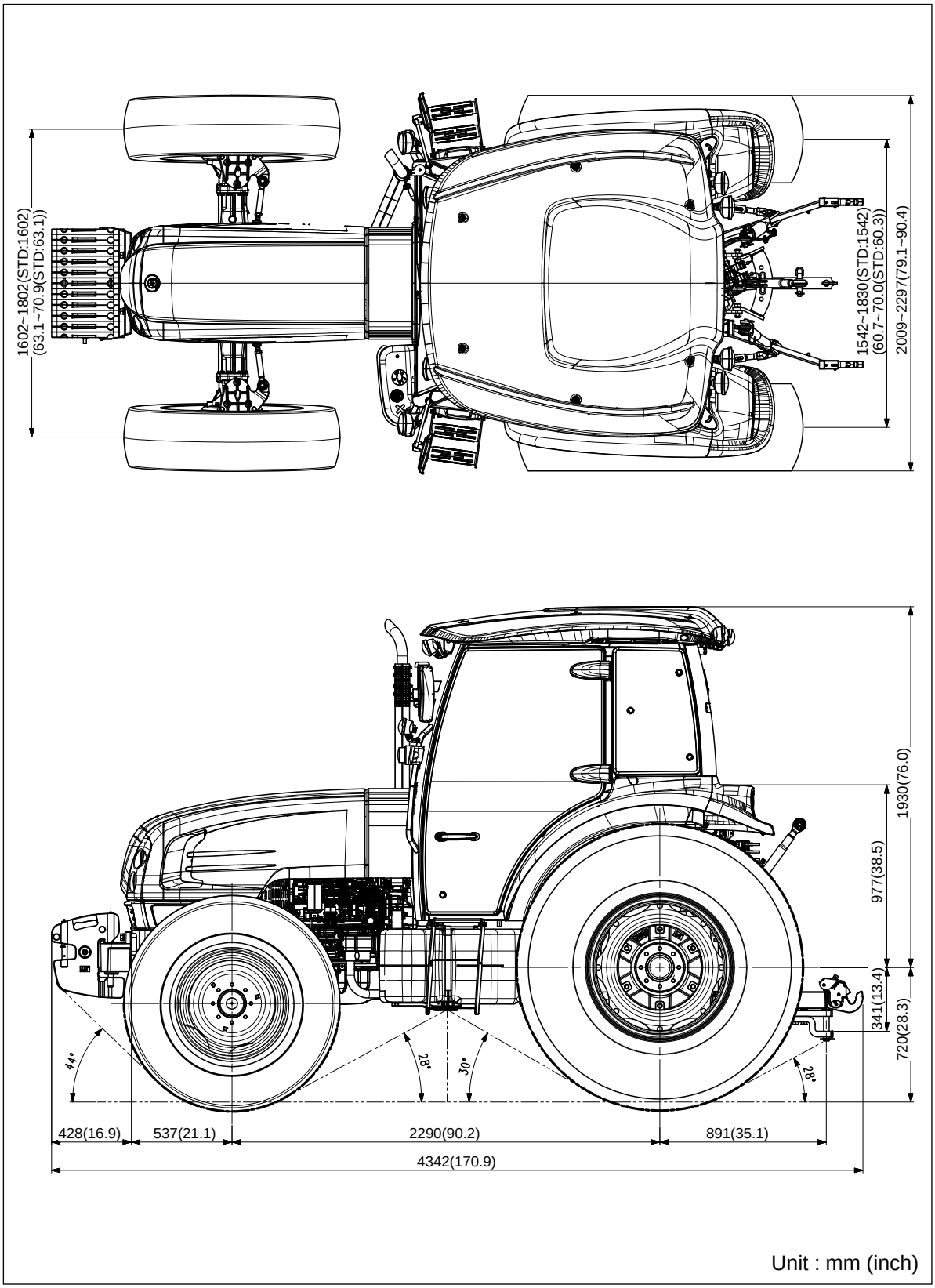
Unit : mm (inch)

(4) Frame type – P7030



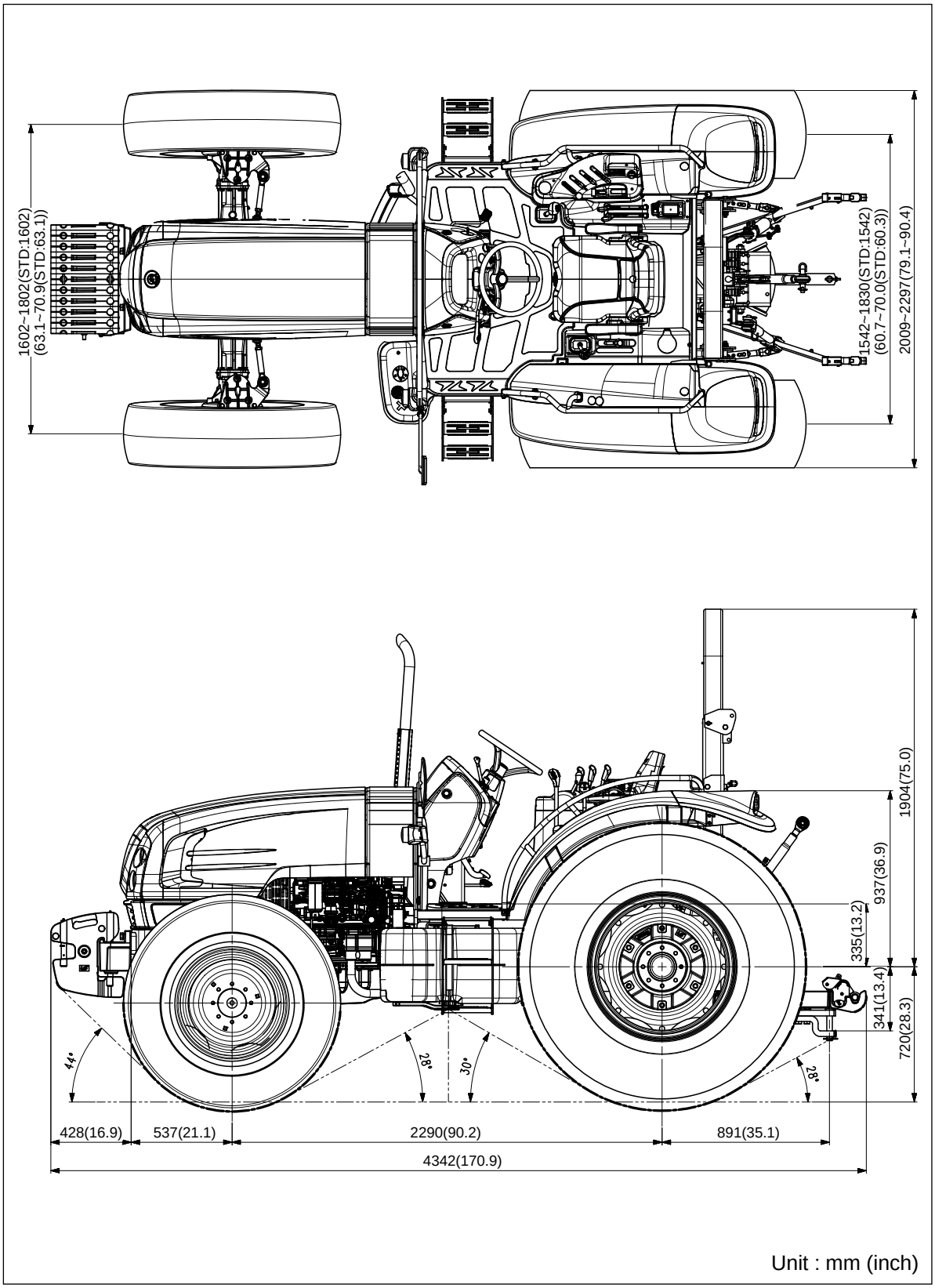
Unit : mm (inch)

(5) Cabin type – P7040



Unit : mm (inch)

(6) Frame type – P7040



Unit : mm (inch)

		P7010 / P7010CPS	P7020 / P7020CPS	P7030 / P7030CPS	P7040 / P7040CPS
WEIGHT	Frame Type	2805kg (6184 lb)	2805kg (6184 lb)	2810kg (6195 lb)	2964Kg (6534 lb)
	Cabin Type	2980kg (6569 lb)	2980kg (6569 lb)	3028kg (6675 lb)	3182Kg (7015 lb)
	Bumper	60kg (132.2 lb)			
	Front weight	40kg(88.2 lb)x 6 or10 (optional)			
ENGINE	Model	F5C-53TC	F5C-59TC	F5C-65TAA	NEF-71TAA
	Type	Direct injection, swirl chamber			
	No. of cylinder	4			
	Diameter x stroke	99 x 104mm (3.90 x 4.09 in)			104 x 132mm (4.09 x 5.20 in)
	Displacement	3200cc (195.38 in.^{3})			4485cc (273.69 in.^{3})
	Compression ratio	17.1 : 1			17.5 : 1
	Engine speed	850 ~ 2500 rev/min			900 ~ 2500 rev/min
	Maximum torque	320N.m / 1350rpm	310N.m / 1380rpm	350N.m / 1300rpm	398N.m / 1300rpm
	Engine power	53kW(72ps) / 2300 rev/min	59kW(80ps) / 2300 rev/min	65kW(88ps) / 2300 rev/min	71kW(97ps) / 2300 rev/min
FUEL INJECTION PUMP	Type	VE ROTARY PUMP			
	Fuel filter	Replaceable cartridge type			
	Injection order	1-3-4-2			
LUBRICATION SYSTEM	Type	Forced circulation type			
	Pump	Trocoid gear pump			
	Filter	Replaceable cartridge type			
COOLING SYSTEM	Pump	Centrifugal type			
	Temperature control	Thermostat			
	Air cleaner	Dry type			
TRANSMISSION	Type	F12xR12 mechanical / F20xR20 mechanical with creeper / F24xR24 Hi-Lo / F40xR40 Hi-Lo with creeper (optional)			
	Main clutch	Dry single clutch for Mechanical / Wet disks for Power shuttle (optional)			
	Forward / Reverse	Synchro-shuttle for Mechanical / Power shuttle (optional)			
	Differential lock	Electro-Hydraulic Differential lock (EHD)			

			P7010 / P7010CPS	P7020 / P7020CPS	P7030 / P7030CPS	P7040 / P7040CPS
PTO	Type		Independent PTO with wet disk clutch / GSP (optional)			
	No. of speed		3 speed gears (optional)			
	PTO / Engine		1st speed : 540 rpm / 1958 rpm 2nd speed : 750 rpm / 2132 rpm 3rd speed : 1000 rpm / 2125 rpm			
HYDRAULIC LIFT	3 Point linkage		CAT 2			
	Draft load detection		Upper link			
	Lowering speed control and cylinder fixing device		Down speed control valve			
	Pump		Gear pump type, Engine drive			
	Rated flow		55.7LPM (14.7GPM)			
	System pressure		18.6MPa (2702psi)			
	Lift capacity	Lower link end	2820 kgf (6217 lbf)			3126 kgf (6892 lbf)
		24” behind lift point	2032 kgf (4480 lbf)			2126 kgf (4687 lbf)
REMOTE CONTROL	Type		Double acting (Spring return type / Detent type(optional))			
	No. of Q/coupler		4EA (optional : 2 or 6EA)			
	F/Loader coupler		Front outlet valve / Joystick loader valve w/coupler (optional)			
STEERING SYSTEM	Type		Hydrostatic			
	Oil		Transmission oil (common use)			
	Min. turning radius (with brake)		3.4m (11.2ft)			3.5m (11.5ft)
	Max. steering angle		55˚ / 40˚			
	No. of steering turns		3.6turns from stop to stop			

			P7010 / P7010CPS	P7020 / P7020CPS	P7030 / P7030CPS	P7040 / P7040CPS
ALTERNATOR	Rated output		14V, 120A			14V, 90A
	Voltage control		Built-in (IC type)			Built-in (IC type)
BATTERY	Voltage		12V			12V
	Capacity		110AH			80 AH x 2
START MOTOR	Output power		3KW			3KW
	Operation		Solenoid start			Solenoid start
LIGHTS	Headlights (Low / High beam)		12V 55W / 60W			
	Turn signal lights		12V 21W			
	Side lights (front)		12V 5W			
	Stop light / Taillight (rear)		12V 21W / 5W			
	Work light		12V 35W(Grille) / 37.5W(Cab) / 35W(Roll-bar)			
OTHERS	Instrument lights		LED			
	Indoor light (CAB)		12V 10W			
	Instrument indicator light		LED			
	Cold start aid		KKSB, Grid heater			
STD. AGRI. TIRE	Front		11.2-24 (8PR)		12.4-24 (6PR)	12.4-24 (6PR) / 13.6-24 (8PR)
	Rear		16.9-30 (8PR)		18.4-30 (8PR)	18.4-30 (8PR) / 18.4-34 (8PR)
WHEEL TRACK ADJUSTMENT	Front	Tracks	4		4	4 / Dealer Spec.
		Dimension	1606~1806mm (63.2 ~ 71.1 in.)		1602~1802mm (63.0 ~ 70.9 in.)	1602~1802mm / Dealer Spec.
	Rear	Tracks	4		4	4 / Dealer Spec.
		Dimension	1532~1830mm (60.3~72.1 in.)		1542~1830mm (60.7~72.1 in.)	1542~1830mm / Dealer Spec.

** These specifications are only general product information and can be changed to improve the product qualification without any prior notification **

Lubricants and Capacity

Lubricants	Capacity	International Standard		Recommended items
Engine coolant (Radiator)	10.5 L (2.8 U.S.gals.)	ASTM D5216		Soft water (50%) + Anti-freeze (50%)
Fuel	100 L (26.4 U.S.gals.)	ASTM D975 No.2		Low Sulfuric Diesel Fuel
Engine oil (Crank case)	9 L (2.3 U.S.gals.)	API CF-4 or CG-4 (Refer to the below table)		KIXX DL (Maker : GS Caltex)
Transmission oil (common use for hydraulic lift and steering system)	55 L (14.5 U.S.gals.)	Mechanical	API GL4 ISO VG 46/68	LSTH570 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
		Power shuttle	API GL4 ISO VG 32/46	LSTH400 (Maker : GS Caltex or S-OIL TOTAL Co. Ltd.)
Front axle oil	12 L (3.1 U.S.gals.)	API GL4 SAE 80W		EPK 80W90 (Maker : S-OIL TOTAL Co. Ltd.)
Grease	Proper amount	NLGI 2		
Clutch & Brake oil	0.5 L (0.1 U.S.gals.)	ISO 7308		Rando HD Z 32/46

RECOMMENDED OIL VISCOSITIES

The correct engine oil viscosity grade is dependent upon ambient temperature. Refer to the chart below when selecting oil for your tractor engine.
In areas where prolonged periods of extreme temperatures are encountered, local lubricant practices are acceptable ; such as the use of SAE 5W 30 in extreme low temperatures or SAE 50 in extreme high temperatures.